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Book of **FARM SEEDS** *for Autumn Planting*

Special Pasture Improvement
Issue for 1930



ARTHUR YATES & CO. LTD.

Warehouse Box 2707 C
184-6 Sussex St. **SYDNEY.**

PROSPECTS OF A GOOD SEASON

AS this booklet goes to press, good rains have been experienced through most of eastern New South Wales and in many parts of Queensland, and conditions in other parts of the Commonwealth are not altogether unfavourable. Generally speaking, therefore, this autumn should be a good planting season for grasses and clovers and other seasonable agricultural seeds. There is a widespread and growing interest in pasture improvement, and we send you this booklet confident that it will be of interest and, we hope, of assistance to those who are intending to increase their cropping areas or improve their pastures by introducing suitable grasses and clovers. This year we have included a long article, which we believe will be of special interest, summarising the information on pasture improvement recorded to date.

February, 1930.

ARTHUR YATES & CO. LTD.

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INDEX

	Pages
"Artificial" Grasses	15-19
Barley	28
Cabbage, Cattle .. .	29
Canary Seed	29
Chicory	29
Clovers	20-23
Grain, Seed	27-28
Grasses, Pasture .. .	15-19
" Mixtures	10-14
Implements	33-34
Kale, Marrow or Chou Moellier	29
Kale, Thousand-headed	29
Kurrajong	29
Linseed or Flax .. .	29
Lucerne	24-25
Mangolds	29
Mustard	29
Oats	27
Pasture Grasses .. .	15-19
Peas, Field	25
" Market	30
Rape, Sowing	23
Rye Corn	27
Salt Bush	29
Seed Sowers	32
Sheep's Burnet	17
Sugar Beet	29
Swedes	29
Tagosaste	29
Tares	26
Terms of Business -- This Page.	
Tree Lucerne	29
Turnips, Field	29
Wheats	28

PASTURE IMPROVEMENT

THE work of pasture improvement is uppermost in the minds of many pastoralists and most dairy farmers at the present time, as landowners are anxious to increase the carrying capacity of their holdings and the production per capita of their stock.

The natural pastures of Australia are the basis of national income for they support practically the whole of the sheep and cattle of the country. Therefore, the study of Grasses and of the principles underlying their successful production are worthy of the greatest attention.

Australia's native Grasses are justly famous for their grazing and their drought-resistant qualities. They are noted for producing the finest and best wool in the world and for withstanding great extremes of heat and drought. No other plants have proved equal to our own for the drier parts, and the success of our pastoral industries depends on them. In the moister coastal regions, however, introduced grasses and fodder plants thrive exceptionally well and should be used to the best possible advantage where soil and climate conditions are favourable.

Until recently little accurate information had been recorded as to the behavior of the numerous grasses and forage plants under varying N.S.W. conditions. Now, however, as is apparent from the following notes, a large fund of authentic data has been compiled. The credit for this advance is due to the Department of Agriculture (and in particular to the Agrostologist's Section); to the pastoralists and farmers who have undertaken experimental work on their holdings and to the leading seed merchants, whose enterprise has made available high-grade stocks of so many valuable grasses and fodder plants not hitherto grown in Australia.

The following notes are, in the main, extracts from articles by Mr. J. N. Whittet, H.D.A., Agrostologist of the Department of Agriculture, to whom due acknowledgment is made. The matter is divided under three headings: (1) Improved Pastures for Sheep; (2) Better Pastures for Dairying Districts; (3) Grasses for Different Districts.

(1) Improved Pastures for Sheep;

After several years of experiment and observation, definite recommendations can now be made regarding the best varieties of grasses and clovers to plant, and the most satisfactory fertilisers and the quantities of same to apply as top-dressings.

The sowing of pastures has proceeded hand in hand with top-dressing, and the value of lucerne has been demonstrated, not only in districts of heavy rainfall, but as a grazing proposition in average wheat districts.

In periods of drought, when the natural pastures have been practically useless, large areas of lucerne on typical wheat land have carried up to two sheep per acre.

In parts of the Tablelands and the Central Western and South-western Slopes, where the country is too rough for lucerne, Subterranean clover has given good results. Maximum results can only be secured from this clover by top-dressing it with superphosphate.

Nourish the Pastures.—By providing the grasses and other pasture plants with food in the shape of fertilisers, the quality of the herbage is greatly improved. The use of superphosphate stimulates the growth and seed production of legumes, which are extremely valuable plants in a pasture. The amount of mineral matter in the grasses and clovers is also increased, particularly the elements lime and phosphorus, which are essential for the animals' health and development. Where there is a marked increase in the lime content, the percentage of nitrogen present in the pasturage is also increased.

The main reasons, therefore, why sheep prefer top-dressed to unmanured portions of a paddock are that:

1. The percentage of mineral ingredients is higher in the former, and the animals' needs for such substances as lime and phosphorus are being supplied.

2. The top-dressed pasture is more palatable and contains a greater amount of protein, due mainly (a) to the increased growth of clovers, (b) to the increased percentage of nitrogen present in the pasturage as a whole.

An ample supply of protein is most important, as this is the chief supply of nitrogen available to the animal. Protein is required for the production of flesh, blood, muscles, tendons, ligaments, brain matter, wool, horns, hoofs, etc. Young growing animals, females producing and rearing young, and animals being prepared for mating, require feed which is well supplied with protein, in order that they may function properly. The amount of fertility removed from the soil by sheep grazing on pastures, corresponds to the quantity of the marketed product, whether it be wool or mutton, or both, and to make up for this withdrawal, the material should be returned to the soil in some other form.

It will be seen, therefore, that by nourishing the pastures through the application of fertilisers, not only is the quantity of feed increased, but a considerable gain in the nutritive value of the plants, takes place. The universal use of superphosphate as a top-dressing for pastures is mainly due to the following facts:—

1. It stimulates the growth of leguminous plants, such as clovers; which are particularly relished by stock on account of their palatability and high feeding value.
2. It encourages the growth of most of our palatable introduced grasses, and also many of our rapid-growing, nutritious native species.
3. It is an economical fertiliser to use, and the residual effect is apparent for more than one season.

Top-dressed pastures remain greener, and consequently are more palatable to stock than unmanured areas, and by not drying out readily the danger from bush fires is lessened.

PASTURE IMPROVEMENT (Continued)

Districts Where Top-dressing is Mainly Carried Out.—Trials at experiment farms and on farmers' and graziers' holdings having proved a success, superphosphate is being applied on a large scale as a top-dressing to pastures in many of the wool-growing centres. This is particularly the case on the Tablelands, in the Riverina, on the Slopes, and parts of the Plains, where applications of from $\frac{1}{4}$ to 1 cwt. of superphosphate per acre every second year are being made. From particulars obtained by the distributors of fertilisers it is interesting to note that most of the fertiliser sold for the top-dressing of pastures in sheep districts has gone to the South-west Slopes and Riverina, and the Southern Tablelands.

Clovers and Superphosphate.—The residual value of superphosphate is seen in the profuse growth of clovers which occurs in many of our wheat districts on fallowed and old cultivation land. Not only is this growth of value in providing valuable feed rich in protein, but it also encourages the formation of humus, an essential requirement for our wheat soils.

To obtain the best results from Subterranean clover, it is essential to top-dress the growth about July of each year with 1 cwt. of superphosphate per acre. Not only is a larger bulk of feed obtained by adopting this practice, but the plants form large quantities of seed, an essential factor with any annual plant if it is to be retained and encouraged to spread in a pasture.

The residual effect of the superphosphate is seen in the increased growth of the clover in the early part of the following year, the top-dressed sections providing early feed, whereas the unmanured portions carry little or no growth.

Converting Old Cultivation Paddocks into Improved Pasture.—The use to which old wheat cultivation paddocks can be put is being demonstrated very effectively in many parts of the State by progressive farmers and graziers.

One grazier at Yerong Creek, near Henty, has been planting Wimmera rye and lucerne for some years past, until now he has 300 acres of Wimmera rye, 200 acres of a mixture of Wimmera rye and lucerne, and a sprinkling of Wimmera rye over 500 acres.

The practice adopted is to sow the Wimmera rye grass and lucerne with the last crop of wheat to be grown; the land is then turned over to grazing for five or six years. The mixture generally used is 2 lb. Wimmera rye and 2 lb. of lucerne. In this district it is estimated that this class of pasture will carry two

sheep per acre, whereas the carrying capacity of unimproved pasture is one sheep per acre.

The country is sweetened up by cultivation, and the better class grasses, such as Wallaby or White top, reappear in the pasture.

The policy of planting Wimmera rye and lucerne is more effective than allowing the old cultivation simply to revert to barley grass, herbage, and weeds. Such growth does not provide the quantity or quality of feed obtained from sowing a few pounds of seeds of the plants, which will supply good grazing practically all the year round.

Improved Pastures Increase the Value of a Property.—In the Riverina, Wimmera rye grass is proving of great value as a grazing proposition on old wheat lands, as well as on ordinary grazing country. An interesting remark was contained in a letter recently received from a grazier in that part of the State, who had over 400 acres of Wimmera rye grass on his property when he disposed of the holding. The letter said, "the buyer subsequently sold the property, over 3,000 acres, about six months later at an increased price of 22s. 6d. per acre, and the Wimmera rye appears to have played a part in the extra price received."

Fat Sheep and Fat Lambs.—In Australia the improvement of pastures will assuredly play a big part, not only in increasing the number of lambs raised, but also in producing better quality sheep. The fact that wool has been decreasing in price of recent years is turning the attention of pastoralists located in the more favoured districts of the State to fat-lamb production. Landholders on the Central and Southern Tablelands, Central-western and South-western Slopes, and Eastern Riverina can improve their country by the use of introduced grasses and clovers, by top-dressing with superphosphate, and by establishing large areas of grazing lucerne. Fat-lamb raisers with large holdings can adopt similar methods. The mixed farmer has the necessary plant available, and consequently is in an excellent position to grow large areas of fodder crops, such as oats, rape, etc., for grazing purposes, and also to plant lucerne.

If ewes are in good condition and on good pastures at lambing time, the lambs are strong and do not suffer any check in growth. Good succulent feed will ensure a bigger percentage of lambs than is the case where pasturage is dry and scanty.

In marketing fat sheep of any kind, especially lambs for the export trade, it is essential that the flesh be free of grass seeds. In spear grass country,



Wimmera Rye Grass—A proved pasture grass; for particulars see page 15.

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PASTURE IMPROVEMENT (Continued)

if good, clean pastures are available, such as those obtained in Riverina and parts of the Western Slopes by the use of Wimmera rye, lucerne, Subterranean clover, etc., fat stock can be marketed free of this deleterious "seedy" material.

Better Pastures Produce Better Products.—The most critical period in a sheep's life is during the first twelve months of its existence, for it is then that the animal largely builds up its framework on which is dependent its wool and mutton producing powers. A strong, virile constitution, together with good pastures, enables the animal to withstand disease and produce a good class of wool free from "break" and other detrimental features. Improved pastures, therefore, are valuable in that they provide more and better class wool and meat, and lessen the danger of disease occurring.

One of the biggest men in the New England district has 800 acres under *Phalaris bulbosa* and considers that two of the main advantages derived from improved pastures in cold localities, are that (1) the animals put on weight during winter months, whereas those feeding on native pastures lose condition; (2) that the quality of flesh produced by grasses such as *Phalaris bulbosa* is greatly superior to that made by animals feeding on native pastures.

In depasturing experiments conducted at Glen Innes Experiment Farm, it has been demonstrated that not only do the sheep attain greater weight and fatten more rapidly on such grasses as *Phalaris bulbosa*, Cocksfoot, and Perennial rye, and White and Perennial red clovers, but that in addition they return an average increase of 1 lb. of wool per sheep, per annum, over those grazing on native pastures. The trial under review extended over a period of three years, the same lot of sheep being used throughout the experiment. It might also be pointed out that the sheep on native pasture had access to leguminous and other fodder crop residues, stubble, and self-sown oats at various periods of the trial.

Ploughing up Poor Pasture and Planting Seed Effects Improvements.—In many instances where originally the pasture was of very poor quality, and growing inferior herbage plants, very considerable improvement has been effected by turning it over with ploughs or disc cultivators, and sowing a mixture of grasses and clovers.

This work has been adopted with advantage on many areas of ploughable Spear grass country on the Slopes and Riverina, the country having been converted into valuable grazing paddocks, free of "seedy" grasses, through cultivation and planting of grasses and lucerne on the deeper classes of soil, and Wimmera rye grass and Subterranean clover on the shallower types of land.

Broadcasting Seed Amongst Native Grasses.—In many districts considerable improvement is being effected by simply broadcasting seed of grasses and clovers amongst the native grasses.

Where top-dressing machines are used, the opportunity should be taken to distribute grass and clover seed by mixing it with the fertiliser. As most of the top-dressing work is carried out in the autumn, this time synchronises with the correct period to sow winter grasses and clovers.

Lucerne.—The areas being sown on average wheat country that is reasonably deep and has produced fair crops of wheat are increasing every year, and



PHALARIS BULBOSA—Photo of a trial undertaken by the late Mr. Arthur Yates at his experimental farm over 20 years ago. He was quick to see the value of this new introduction and in Yates' 1910 Farm Seed Catalogue said "After exhaustive trials we report that it promises to be one of the very best grasses we have tested for many years. Unfortunately it is a shy seeder and supplies will probably always be expensive."

This report has been amply confirmed by successful results throughout the Tableland Country and even on part of the Slopes; in fact a paddock sown down about the time of the above experiment has always been recognised as one of the best in the district.

within the next ten years we should find many thousands of acres of lucerne planted for grazing purposes in the drier parts of the State. In good seasons large quantities of lucerne hay could be harvested from the better areas in this type of country, and what better standby could one have for drought periods than this product? It stacks and keeps well, and there is no grain present to attract rats and mice, as is the case with most other types of hay.

A considerable increase in the acreage under lucerne for grazing purposes has been recorded in the colder parts of the State, such as the Northern, Central, and Southern Tablelands districts. Some years ago the general idea existed that lucerne would only grow satisfactorily on deep, rich, alluvial flats, but to-day we consider it to be one of our best and hardiest pasture plants for cold, as well as dry, localities.

Herbage and Weeds as Silage.

There are thousands of acres of pasture land which are very free of fallen timber, stones, etc., and on which mowing machines could be operated to cut this valuable feed. It can be stored in pits as a standby for dry times, instead of allowing it to dry off, as in the majority of cases it does now, and simply provide fuel for bush fires. Some of our pastoralists are conserving this valuable green feed as silage, but the practice should become more general. Silage is an excellent feed for sheep during drought on account of its laxative properties.

Clover burr hay is a very nutritious fodder, on account of the fact that the material contains large quantities of seed. The value of harvesting and stacking this material as a standby for dry periods is now recognised by a few pastoralists.

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

PASTURE IMPROVEMENT (Continued)

In the West.—In the far west the grazier is dependent upon native grasses, herbage, saltbushes, fodder shrubs, and fodder trees to provide sustenance for the animals.

Indiscriminate clearing and picking up of all small timber is a mistake, as the area soon becomes wind-swept and bare of cover in which seeds could be retained and germinate, and the resultant plants become established.

In this section of the State, droughts, overstocking, and the rabbit invasion have been mainly responsible for the decreased carrying capacity of the country. The growth of the better class native grasses of the Star or Windmill, Panic, Wallaby, Blue, and Mitchell types should be encouraged and they should be given an opportunity to seed.



(2) Better Pastures for Dairying Districts;

In most of our dairying districts the need is apparent for a change of food from the ubiquitous paspalum, which has taken possession of the best of the country in our coastal areas.

While providing good food during the warmer months of the year, it suffers considerably from frosts and droughts, and at such periods is of little value for producing and maintaining a good flow of milk.

Fortunately we have in White clover a very nutritious legume, and one of the very few useful plants which will thrive in association with a rampant grower such as paspalum. The clover does not last right through the year, however, and it is necessary to incorporate other plants, and especially legumes, in the pastures, and so endeavour to provide a change of feed for the animals during the four seasons of the year.

Good Pastures Reduce Disease Liability.—If stock have access to succulent pastures they are less liable to become affected with such troubles as rickets, bone-chewing, etc., which are generally associated with poor pasturage. Much poor land will produce infinitely better feed, if it can be broken up and sown with suitable grasses and clovers. On some of the country implements cannot be worked, but winter-growing plants such as Wimmera Rye, Italian Rye, Perennial Rye, Cocksfoot, Sheep's Burnet, and Subterranean clover can be scattered in suitable places on these areas.

By having numerous small paddocks, rather than a few large ones, a system of rotational grazing can be adopted, and by establishing some paddocks of winter grasses and others of summer pastures, each can be grazed at the time when they contain their maximum amount of nutritive material. The grasses and clovers can thus be handled in such a way as to enable them to rest, recuperate, and seed at the correct time, thus maintaining the maximum degree of efficiency in each. Attention should be given to sowing mixtures of grasses and clovers most suitable for the district, and particularly those which provide feed at those times of the year when the natural pastures are at their worst.

If the property is well subdivided, the pastures can be utilised when the feed is most nutritious. Milking cows require palatable feed rich in protein, and the grasses should be fed off when the growth is young, but as the plants mature the fibre increases and the percentage of protein diminishes.

The use of fertilisers, such as superphosphate, stimulates the growth of grasses and legumes, and the amount of mineral matter in the plants is increased, particularly the elements lime and phosphorus, which are essential for the animals' development. Stock grazed on pastures deficient in these substances invariably become "bone chews," but by feeding the pasture plants with fertilisers, the composition of the plants is considerably improved. Where a marked increase in the lime content of the soil takes place, the percentage of nitrogen in the pasturage also increases.

We find that stock prefer top-dressed portions of a paddock to unmanured sections, because (1) they are obtaining more lime and phosphorus (two substances essential to the building up and maintenance of the animals' framework), and (2) the top-dressed pasture is more palatable and nutritious, and contains a greater amount of protein, due, mainly (a) to the increased growth of clovers and (b) to the increased percentage of nitrogen present in the pasture as a whole.

Therefore, by nourishing the pastures, not only is a greater quantity of feed obtained, but a considerable gain in the nutritive value of the plants is effected.

Top-dressing Winter Grasses and Clovers.—Most of our winter grasses, and especially the clovers, respond to fertiliser, and applications of 1 cwt. to 1½ cwt. of superphosphate per acre should be made during the autumn months. Subterranean clover, however, should be top-dressed later in the year—in June or July. It has been demonstrated for many years past, that by top-dressing pastures the growth of the better class grasses is encouraged, and the development and seed production of clovers are increased. Clovers are the most economical forms in which to supply protein to animals, and it is expedient that young growing stock, animals producing and rearing young, and cows in milk, receive large quantities of this valuable nitrogenous material, which is so essential to their well-being.

Stock grazing on pastures remove from the soil an amount of fertility that corresponds to the quantity of meat or milk produced from the pasturage consumed. To counteract this loss the fertility of the soil must be reimbursed, chiefly through the application of fertilisers.

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PASTURE IMPROVEMENT (Continued)

To Reduce Labour Costs.—To reduce the cost of production, the dairy-farmer is looking to permanent pastures to lessen the necessity for growing large areas of annual crops for green feed. Winter grasses, lucerne, and clovers are being extensively sown in the Central Coast district and the colder parts of the State, and more activity in this matter and in paspalum renovation, should be displayed by South Coast and Northern Rivers dairy-farmers than is the case at the present time.

Winter Grasses and Clovers versus Paspalum.—The price of butter is generally high when the milk flow is decreasing, and this usually occurs during winter months. In districts where frosts are experienced paspalum pastures are then producing little or no nourishing material, and unless succulent winter feed is available the milk flow further diminishes as the winter advances. Where succulent winter grasses and clovers are available, a good flow of milk is assured, not only during the colder months, but during the greater part of the year, on account of the fact that the majority of the plants recommended for coastal districts are perennials.

Here is a concrete example from the Central Coast district, the particulars of which were supplied during July, 1925. A few years ago two persons decided to dissolve partnership; they halved the farm and divided up the herd, picking cow for cow. Both men grew about the same quantity of winter fodders and also Saccaline sorghum. One man decided in 1923 to plant winter grasses and clovers, and Departmental grass plots were established on his property on land that had been down to paspalum for many years; he also planted additional areas of winter grasses and clovers. All seed was sown in autumn, 1923, on paspalum land that had been ploughed the previous summer, and that had been made reasonably free of this grass.

A letter from this farmer reads as follows:—“Referring to my opinion and results of winter pastures, it is now over two years since work was commenced with them, and I am very pleased with the result; particularly last season, as we had a good summer and the paddocks in question threw up a large quantity of feed all the summer, with the exception of February, which was hot and dry. During the winter and early spring of 1924 I had excellent results, and almost doubled the returns which my former partner obtained from the same number of cows (30), which were grazed on paspalum pastures (he has no winter grasses). Of course, we were both feeding about equally well on late-sown Saccaline and cow cane. I beat him rather badly until about November, when he caught me up, the paspalum paddocks then containing a tremendous body of succulent feed. We then remained fairly even through the summer months.

“In April, 1925, the paspalum had ‘shot its bolt,’ and the winter grasses began to respond to the cooler weather and good rains. As a result of the paspalum being affected by frost, his cows dropped back 200 lb. of commercial butter for the month, whereas mine returned me about 100 lb. more than for March, thus beating the other herd by 300 lb. for April. Since then I have consistently beaten him right through the winter. I planted more winter grasses and clovers last autumn, and also the Toowoomba Canary and Tall Oat grasses you sent me.”

The grasses used in these trials were Cocksfoot, Perennial Rye, Tall Fescue, and Prairie; and the clovers were Perennial Red, Cow Grass, and White. When inspecting this area in August, 1924, although the cows had been grazing on the pastures for some time, it was estimated that there was five times as much feed on the winter grasses as on an equivalent area of paspalum. Again, in May, 1925, an inspection showed that the winter grasses and clovers were green and succulent, and the paspalum dry and harsh. This condition of affairs would exist from May to September. The case proves conclusively that during the cooler months of the year winter grasses and clovers will carry milking cows more effectually than paspalum.



TALL FESCUE—Photograph taken over 20 years ago at Yates' Trial Grounds. In our 1910 Farm Seed Catalogue we said of this grass: "It has lately proved to be a really good grass for New South Wales and has thriven in the more or less exhausted lands of our old settled dairying districts." Its extended use for present day pasture mixtures shows how well this grass has justified our early opinion.

Grasses Recommended for Various Situations.—The best winter grasses to grow in coastal districts are *Phalaris bulbosa*, Tall Fescue, Perennial Rye, Cocksfoot, Tall Oat, and Wimmera Rye.

In swampy land in localities where the winters are not too severe, *Poa* (*Glyceria*) *fluitans*, *Lotus major*, and Strawberry clover give good results.

On heath country and also on elevated sandy land in coastal districts, carpet grass (*Paspalum compressum*) is useful for grassing such areas. A striking example of the value of this grass for reclaiming heath country and eradicating bracken fern is to be seen at Woodburn, on the North Coast. Country there has been converted from practically useless sandy wastes into useful grazing areas. Carpet grass, however, has neither the carrying capacity nor the palatability of either paspalum or kikuyu, and is not recommended where these two grasses thrive. It is spreading in many localities on the North Coast and choking out the ordinary paspalum, and as stock do not relish it as much as the better known paspalum, and as it does not produce as much feed, the carrying capacity of the pastures where it is in the ascendancy is becoming considerably reduced.

PASTURE IMPROVEMENT (Continued)

Clovers.—The most outstanding plant for sowing in coastal districts, and especially amongst paspalum, is White clover (*Trifolium repens*). In many localities White clover is so plentiful that in a good season dairy stock have to be judiciously grazed on it, otherwise losses may occur through hoven or bloat. There are centres, however, where this species of clover is becoming thinned out of pastures through overstocking, and re-seeding of the area is necessary.

Until recently, the idea that the various perennial forms of Red Clover (*Trifolium pratense* var. *perenne*) formed little or no seed was generally accepted, but their spread into areas which have not been planted with seed has proved that a fairly liberal amount of seed is formed, especially when the crops are grown under cultivation. During the past few years, the growing of Perennial Red clover on cultivation land and grazing stock on it, has been fairly extensively practised in Central Coast districts and in dairying centres on the Southern Tableland, and it is now quite a common sight to see patches of this clover springing up in paspalum and native grass paddocks. This result is obtained through the cows grazing on clover areas which are in seed. The seed is evidently not affected by the animals' digestive processes, as it germinates freely in the droppings, which form an excellent medium for rapid growth. This is also a most satisfactory method of spreading Subterranean clover in pastures. By returning the stock into a profuse growth of Subterranean clover that is carrying large quantities of seed, this valuable legume soon establishes itself among the other pasturage.

Paspalum and its Renovation.—Ploughing the paspalum in March or April every fourth or fifth year with a mouldboard plough, turning furrows about 6 inches wide, and working the furrows down with disc-harrows, disc-cultivators, or tine harrows, and broadcasting the following mixture of seed gives very beneficial results:—Wimmera Rye 2 lb., Italian Rye 2 lb., Perennial Rye 2 lb., Phalaris bulbosa 1 lb., Cocksfoot 2 lb., Tall Fescue 2 lb., Subterranean clover 1 lb., Perennial Red Clover 1 lb., White clover 1 lb., and Sheep's Burnet 1 lb. per acre. If the soil is friable and deep, include 1 lb. of lucerne in the mixture. Ploughing induces a new root system to develop, and the plant is then better able to assimilate any fertiliser applied and to make full use of the rainfall.

Where it is impossible to plough, broadcast the following mixture amongst the paspalum during the late autumn:—Wimmera Rye 3 lb., Italian Rye 2 lb., Perennial Rye 2 lb., Subterranean clover 2 lb., White Clover 1 lb., and Sheep's Burnet 2 lb. per acre. Use the disc harrow or chain harrow where possible to work the seed in and round the crowns of the paspalum plants.

If it is not desired to sow grasses on ploughed land, by broadcasting $1\frac{1}{2}$ to 2 bushels of oats per acre on the area little or no loss of feed is sustained through the paddock being ploughed.

If it is desired to renovate paspalum in localities such as the Dorriggo, where long, cold winter periods are experienced, the grass should be ploughed during spring months; heavy frosts will kill out a big percentage of the grass if it is ploughed during the



A portion of a series of Clover tests undertaken at our Trial Grounds.

autumn. As useful grasses such as Cocksfoot, Wimmera, Italian and Perennial Rye grasses, Fescues, Phalaris bulbosa, and various species of clovers, provide good feed all the year round, and particularly during the winter months, larger areas should be sown than is the practice at the present time. It is readily admitted by farmers on the Dorriggo plateau, that originally their pastures of Cocksfoot, Rye grass, and clover carried more stock than is the case to-day, when paspalum predominates. Wherever it is possible to do so, it is sound practice to plough up paspalum areas in the autumn, and sow the mixture of grasses and clovers already given for ploughed paspalum areas. This will result in an increased carrying capacity on land which, under paspalum, can only be looked upon as summer pasture.

By ploughing in the autumn a considerable quantity of the paspalum will be killed off, and if a mixture of winter grasses and clovers is sown, a good mixed pasture, with a sprinkling of paspalum, will result.

Manurial Trials with Paspalum.—On red volcanic soils, superphosphate, 2 cwt. per acre, is giving good results, especially where the paspalum has been ploughed. At Wollongbar Experiment Farm the residual effects of ploughing carried out in 1925, and an application of 2 cwt. superphosphate per acre made in the same year, are shown in the following weighings, which were obtained from a cutting made in February, 1927:—

	tons. cwt. qr. lb.			
Check plot, unploughed & unmanured	3	7	3	7
Plot, ploughed and unmanured	5	13	1	13
Plot, ploughed & manured with superphosphate, 2 cwt. per acre (1925 application)	6	9	0	24

The area from which these results were obtained was thrown open to continuous grazing for eight months prior to being closed up to allow growth to mature for harvesting purposes.

ARTHUR YATES AND CO., LTD.,

PASTURE IMPROVEMENT (Continued)

Back to Cultivation.—When it is intended to bring a paspalum paddock back to cultivation it should be ploughed with a mouldboard plough in the autumn, thoroughly worked with a disc harrow or disc cultivator, and a winter fodder crop, such as oats or barley, plus vetches, field peas, or Berseem clover, sown broadcast over the area in June or July.

After the fodder crop has been removed, keep the land worked during the summer months to destroy any paspalum seedlings, and make an early sowing of the winter fodder crop in February or March.

Areas which Cannot be Ploughed.—Experiments carried out by the Department at a number of centres in North Coast districts have shown that on very hilly country, where it is impossible to plough, good results are obtained from top-dressing paspalum every second year in August or September with a mixture of superphosphate 2 cwt., and sulphate of ammonia $\frac{1}{2}$ cwt. per acre.

Harrowing the Pastures.—Implements of the chain harrow or similar type, that will give the ground a good scarification and break down and distribute animal droppings, are recommended for use on pasture land. By disturbing the surface of the pasture a seed-bed is formed in which grass and clover seed will readily germinate. A mulch is also produced around the established plants, and rain and soil moisture is better conserved and fertiliser retained than would be the case if the surface soil was in an extremely consolidated condition.

Kikuyu Grass.—This is a useful plant to work in amongst paspalum, or to plant in ploughed paspalum areas, as it will not only hold its own, but in most cases will choke out the other grass. Kikuyu is more drought resistant, and produces more feed during winter months than paspalum, although it must be remembered that it is primarily a summer grower. It does not form seed, and consequently roots have to be planted. The best time to plant is during the spring. Where it is impossible to plough the roots in, such as on hillsides or in stony land, use a mattock or hoe, completely burying the roots 1 to 2 inches deep, so as to prevent stock from pulling them out of the ground during the early stages of growth.

Reports Received Concerning Kikuyu Grass.—From Gleniffer, Bellinger:—I have no hesitation in saying that I consider Kikuyu very suitable for the Bellinger River district. It keeps wonderfully fresh and succulent during the winter months in comparison to paspalum.

From Kiama:—Kikuyu makes wonderful growth, producing a mass of fodder much relished by both horses and cattle. Can recommend it for rough, stony ground.

From Singleton:—Kikuyu has given splendid results, withstanding dry weather well, and readily responds to rain.

Kikuyu Prevents Soil Erosion.—Kikuyu grass is proving exceptionally useful on the volcanic hills of the South Coast, as it not only produces excellent food for dairy stock, but in addition prevents soil erosion on the hillsides.

Reports from Tilba Tilba state that this grass is growing well on the hillsides, making a nice mat of feed, which is readily eaten by stock. It is most useful for preventing soil erosion and assists in checking weed growth.

It is reported from Gerringong that Kikuyu has done well on the hillsides; it helps to hold the soil together, and is not tramped out, as is the case with tussocky grasses like Cocksfoot or Perennial rye. If stones are removed from hillsides the soil is washed away, but once Kikuyu is well established the stones can be taken away. Cows are very fond of this grass.

Ploughing Improves the Palatability of Paspalum.—The superiority of ploughed paspalum pastures over unploughed areas has shown up to a marked degree during the past season. At a property at Murwillumbah the feed on areas ploughed eighteen months ago has been cropped close to the ground, whereas the grass on unploughed portions, located in the same paddock, has been neglected by stock, the feed standing 2 feet to 3 feet high in places.

Increased Carrying Capacity and Yields from Ploughed Paspalum.—A leading Bangalow farmer ploughs up his paspalum pastures at least once every five years. During the early spring of 1926 even those paddocks which had been ploughed four years ago were throwing up fresh palatable growths of paspalum, whereas on adjacent areas which have never been ploughed the feed was harsh and very unpalatable. The country consists of red volcanic soil, is fairly steep, and typical of the district. The owner attributes the excellent condition of his cows and their high yields during the dry season to the quality of the feed on his ploughed paspalum pastures. His holding of 108 acres is divided into twenty-two paddocks, and sixty head of stock is carried. All of the paddocks have been turned over at some time or other, excepting a few patches which are too steep to plough. As a result of handling the paspalum in the way described, the total production from the cows has increased from 8,000 lb. to 11,000 lb. of commercial butter per annum. These instances illustrate the fact that the effect of ploughing in improving the palatability of the grass continues to be in evidence for a considerable period. When these areas were recently inspected it was surprising to note the succulence of the paspalum during August on country which was suffering severely from a dry season.

Burning Paspalum.—Some farmers adopt the practice of burning off the dry growth on paspalum pastures. This is not a sound practice, as the crowns and surface roots of many of the plants are destroyed, as well as much seed that is lying on the ground; bare patches result, and weeds and other useless plants become established in the pasture.

Cutting Paspalum for Hay.—Where a mowing machine can be operated, much of the rank growth of this grass can be cut and converted into hay, which is a useful standby during winter months or droughty periods. This work is generally carried out towards the end of the summer season. The grass then makes fresh succulent growth, and, where frosts are not too severe, is in a better condition to go through the winter than if carrying rank, dry, unpalatable feed.

Operations in the Tumut District.—Considerable activity has been shown by landholders in this district in the matter of pasture improvement, the grasses that give the best results on the heavy soils on the flats (which are generally very wet in the winter) being Perennial rye, Wimmera rye, and Phalaris bulbosa. White, Perennial Red, and Subterranean are the best clovers. On the lighter types of alluvial

PASTURE IMPROVEMENT (Continued)

flats, which are well drained, lucerne gives excellent returns, and larger areas should be planted with this crop on this class of soil.

Old cultivation land on the undulating country can with advantage be planted with a suitable mixture of grasses and clovers, rather than be allowed to go back to native grasses and herbage. The most satisfactory mixture for this class of country is Wimmera rye 3 lb., *Phalaris bulbosa* 2 lb., Tall Fescue 2 lb., Subterranean clover 2 lb., lucerne 1 lb. per acre.

On the rougher types of hill country in this district, considerable areas are being sown with Perennial rye, Wimmera rye, Cocksfoot, Subterranean clover, and Sheep's Burnet. The seed is scattered on broken land where there is sufficient soil to hold and germinate it; plantings are also made on dug-out rabbit burrows, in and around stump-holes, and any other suitable position where the plants can obtain a good foothold. When those plants are in seed, stock grazing over them distribute the material into other pasture paddocks. This is particularly the case in this district with large stock grazing on Subterranean clover, as their droppings provide an excellent medium in which the seed germinates; in addition, the plants make rapid growth, and form a plentiful supply of seed.

The value of improved pastures to the dairy farmers of this district is exemplified in the work carried out on a large holding at Tumut. Not only are more cows carried than was the case in 1915, but the average return per cow has increased considerably. It is considered that these increases are mainly due to improved pastures, as the area now under cultivation is practically the same as in 1915.

Perenniality of Cocksfoot, Perennial Rye Grass, Perennial Red, and White Clovers.—It is advisable to sow only seed that has been saved from old pastures of long standing. Even though an extra charge of a few pence per pound has to be paid, the additional expenditure will be worth while, as seed produced from old established pastures tends to produce plants of satisfactory longevity.

Lucerne.—Although lucerne is fairly extensively grown in coastal districts, dairy farmers should endeavour to grow larger areas, as this crop is undoubtedly the most satisfactory hay, green fodder, and grazing proposition available. Once established

it lasts for a number of years; although the initial expenditure for seed and preparation of the land is somewhat high, the value of the feed produced during the first two years of the crop's growth more than covers these costs. Lucerne as green feed or hay is excellent fodder for dairy stock. Being a legume, it is rich in protein, an ingredient that is required in large quantities by milking cows in high production. On most dairy farms there is often a shortage of succulent green feed during winter months, and cows respond well if judiciously grazed for a brief period each day on the winter growth of lucerne. At the end of the winter, the fields should be worked with a springtooth cultivator fitted with special lucerne points, to break up any crust formed on the surface soil; a top-dressing 2 cwt. of superphosphate per acre should also be applied at this period.

Small Paddocks and Change of Feed Essential.—In order to obtain the maximum returns from the pastures numerous small paddocks are essential; these will enable the farmer to adopt a system of rotational grazing, thus providing the animals with frequent changes of succulent and nutritious pasturage.

Pasture under Irrigation.—The growing interest in pasture to be grown under irrigation prompts us to include a word or two on suitable varieties. Of course it is necessary to thoroughly grade and prepare the land, which should be firmed before sowing. Seeding should be done in early autumn when the weather breaks; the plants should thus be well established before irrigation becomes necessary the following summer. The following specification is submitted for average conditions in the Murray River and Murrumbidgee irrigation areas.

W. 7.

20 lbs.	Perennial Rye Grass.
15 "	Italian Rye Grass.
5 "	Cocksfoot.
2 "	Perennial Red Clover.
1 "	White Clover.
1 "	Alsyke Clover.
1 "	Subterranean Clover.
2 "	Lucerne.

47 lbs. per acre.

Sow March-July.



Lucerne is the King of Fodder Crops for the dairy farm.

ARTHUR YATES AND CO., LTD.

PASTURE SPECIFICATIONS

Recommendations for typical districts and for various soil and climatic conditions

THE following table of Grass Seed Specifications has been drawn up by the Agrostologist of the Agricultural Department of New South Wales as recommendations for the different parts of the State. In this work of distributing information and suggestions as to Pasture Improvement, we are glad to co-operate; and with the knowledge we have gained from a long connection with the grass seed business of Australia and New Zealand and the experiences of customers throughout the country, we are always pleased to offer such further advice and assistance as may be required by those who cannot suit any of the following to their particular conditions. These tables are published as a guide to help those interested to work out a pasture mixture for their particular requirements and should prove valuable not only to landholders of New South Wales, but to the whole Commonwealth, as these Grass Seed Specifications should do well in other parts with similar climates.

For general information concerning the varieties mentioned in the following lists, see pages 15-24; those who wish to study the different forage plants in still greater detail are recommended to write for the book "Grasses and Fodder Plants of New South Wales," by E. Breakwell, obtainable from Arthur Yates & Co. Ltd. Price 6/-, postage 4d. extra.

N.B.—When several specifications are suggested for a particular district (other than those for special conditions) they are largely complementary one to another, and therefore it is advisable to sow different paddocks with the different mixtures, thus providing for continuance of feed and variation of diet. The different grasses and clovers vary as to their productiveness at the different seasons of the year. In soils of fair quality or where preparation of the land for sowing has been good, heavier sowings may sometimes be made with advantage.

PREPARATION AND SOWING.

The best preparation possible should be given as with other crops; but in the many cases where thorough ploughing, etc., is impossible, advantage should be taken of any means or circumstances which will provide suitable conditions. The following suggestions will assist customers to adopt or devise methods to suit requirements.

Grass and Clover Seeds require only a very light covering of soil and brush or chain harrows are most suitable for covering seeds on loose soil. Where implements cannot be worked and if the soil is friable, seed can be effectively covered by driving a mob of sheep over the area.

When sowing mixtures of light and heavy seed, only small lots should be mixed at one time, and the seed should be kept well stirred while distributing.

Where very small quantities per acre are being sown, it will be found easier to do so by sowing half the seed first at half the rate per acre, thus going over the land twice. By this means any unevenness in the first sowing will probably be corrected the second time over.

Wheat Drill—

- (a) The seed can be mixed with Superphosphate ($\frac{1}{4}$ to 1 cwt. per acre) just before sowing and sown through the fertiliser box;
- (b) Special attachments for sowing grass and clover seeds can be obtained for some makes of drills. In either case the hoes or discs should be set to run on the surface of the ground, as the seed only requires to be lightly covered. If, afterwards, much of the seed remains uncovered run a harrow at right angles to the drill.

Top-Dressing Machine—The seed is mixed with the fertiliser as above.

Broadcasting by Hand.—It is difficult to do this accurately, but it is quite successful on small areas and where only one or two varieties are being sown.

Broadcasting Machine (hand-driven).—These are very handy and inexpensive machines, and although several types are available we strongly recommend the "Cahoon," which we offer at 28/- (postage extra), (see illustration on page 32). We ourselves have sown many acres with this machine, and we have found that with a little practice quite small quantities per acre can be sown accurately. When sowing very small quantities per acre the seed should be mixed with fertiliser or fine dry soil or sand.

Casual Distribution—

- (a) One customer reports a very successful seeding of Rhodes Grass by carrying a sack of seed on horseback and allowing it to trickle out through a slit in the bottom;
- (b) Opportunity should be taken to distribute the seed any time when the surface of the soil is disturbed—for instance, digging out rabbit burrows, storm washes, when cutting areas of noxious weeds, such as burrs, etc.;
- (c) Fallen timber, stumps, etc., provide effective covering and are specially useful in preventing naturally dropped seed from being blown away on flat country subject to strong winds. It is a mistake to remove this cover by burning or other means;
- (d) A favourite method in Coastal areas is to sow seed immediately after burning off the heavy undergrowth. The ash forms an effective seed bed and the grasses and clovers become established before the natural growth recovers.

Time of Sowing.—The approximate periods during which mixtures may be sown are indicated at foot of each, but, of course, customers must be guided by local and seasonal conditions and should realise that the limits given are necessarily wide. For instance, if "Plant March-August" is given, the intention is that sowings should be made in Autumn and early Winter, but may, if necessary, be made as late as August if the season be then favourable.

Supplies and Costs.—As with all seeds, supplies are each year governed by weather conditions, favourable or otherwise, during the growing and harvesting period. For this reason, and also to ascertain the approximate cost per acre, those who contemplate pasture improvement work are advised to refer to Yates' Current Price List (published every three or four weeks). Then, if any variety be out of stock the quantities of the others may be varied or an alternative chosen.

PASTURE SPECIFICATIONS (Continued)

IMPORTANT NOTICES

TIMES OF SOWING.—See paragraph at foot of preceding page.

HOW TO ORDER.—Please refer to the specifications by number (viz., "N.C. 3" or "S.C. 2"). When a specification is ordered we do not mix the varieties before despatching. Their weight and physical qualities vary so greatly that during transportation they will not remain evenly mixed.

SPECIFICATIONS MAY BE VARIED—

- (1) The specifications in these pages are recommendations for average conditions, but may be varied as to varieties, proportions, and total quantities according to nature of preparation of soil, class of country, stock carried and varieties available.
- (2) When a complete specification is ordered by number we will vary the varieties and quantities stated if one or more kinds are out of stock; or if, from the particulars given with order, we think it is in the customer's interest to do so. If this is not desired, please mark order "DO NOT SUBSTITUTE," in which case the customer will be advised and asked for further instructions.

COSTS.—See paragraph "Supplies and Costs" at foot of previous page.

FOR NORTH COAST

(between Tweed and Macleay Rivers) and similar sub-tropical areas throughout Australia with heavy summer rainfall, mild winters, with little or no frost and usually light winter rains.

N.C. 1.

For general summer pasture.

12 lbs. Paspalum dilatatum.

4 " White Clover.

16 lbs. Per acre.

Plant Oct.-March.

N.C. 2.

Specially suited for undulating country with deep soils.

5 lbs. Rhodes Grass.

2 " Lucerne.

7 lbs. Per acre.

Plant Sept.-Oct., or Feb.-March.

N.C. 3.

This mixture is for a fairly rich soil which has been thoroughly prepared, and should give excellent winter and early spring grazing.

It is recommended for sowing on worn-out Paspalum pastures, especially where cold winters are experienced, such as on the Dorriggo, as it provides a good growth throughout the year. In this case the Paspalum should be ploughed in the autumn, as then a considerable quantity will be killed off by winter frosts.

Sowing the mixture of grasses and clovers at this time a good mixed pasture, in which a sprinkling of Paspalum is present, will result.

2 lbs. Tall Fescue.

2 " Prairie Grass.

2 " Italian Rye Grass.

2 " Perennial Rye Grass.

2 " Wimmera Rye Grass.

2 " Cocksfoot.

1 " Phalaris Bulbosa.

1 " White Clover.

1 " Perennial Red Clover.

1 " Lucerne.

1 " Sheep's Burnet.

17 lbs. Per acre.

Plant March-July.

N.C. 4.

Provides a welcome change of feed from Paspalum and makes growth over a long period. Should not be put into land likely to be required for cultivation, as while it does not spread readily into surrounding land, it is rather difficult to eradicate.

Kikuyu Grass Roots planted 3-4 ft. apart in early spring.

2-3 lbs. per acre White Clover would add to the value of this pasturage.

Plant August-Oct., and early autumn if favourable.

N.C. 5.

For swampy areas where the winters are not very cold, Poa Aquatica (water meadow grass), Poa (Glyceria), Fluitans (manna grass or floating sweet grass).

For saline marshes or swampy lands which are flooded in winter and comparatively dry in summer, Paspalum Distichum (water couch).

The above grasses are obtainable in roots only.

Lotus Major and Strawberry Clover are valuable for marshy lands and do well in conjunction with Poa (Glyceria), Fluitans and Paspalum Distichum.

Seed of these is usually available. Plant at any favourable time.

N.C. 6.

For heath country and elevated sandy land near the coast.

5 lbs. Paspalum compressum (Carpet Grass).

This grass does not compare with Paspalum or Kikuyu as a pasture grass and is not recommended for situations where these two grasses thrive.

Plant Oct.-March.

N.C. 7.

For renovating Paspalum pasture where it is impossible to plough, broadcast and harrow in the following:—

2 lbs. Wimmera Rye Grass.

2 " Italian Rye Grass.

2 " Perennial Rye Grass.

2 " Perennial Red Clover.

1 " White Clover.

2 " Sheep's Burnet.

11 lbs. Per acre.

Plant April-July.

N.C. 8.

For temporary pasture on good alluvial cultivation lands which can subsequently be easily ploughed up and brought back to cultivation.

8 lbs. Perennial Rye Grass.

2 " Italian Rye Grass.

2 " Wimmera Rye Grass.

2 " White Clover.

14 lbs. Per acre.

Sow Feb.-July.

N.C. 9.

This additional specification is particularly suited for rich river flats similar to those in the Kempsey district.

3 lbs. Phalaris Bulbosa.

6 " Perennial Rye Grass.

2 " Wimmera Rye Grass.

3 " Prairie Grass.

2 " Perennial Red Clover.

2 " Subterranean Clover.

18 lbs. Per acre.

Plant March-July.

ARTHUR YATES AND CO., LTD.,

PASTURE SPECIFICATIONS (Continued)

FOR CENTRAL COAST

(between Kempsey and Sydney) and similar districts where the climate is warm in summer, with fair, mid and late summer rains; winters mild and cool with occasional frosts and a fair winter rainfall. The typical fruit of this climate is the Orange.

The Mixtures N.C. 1, N.C. 2, and N.C. 4 are suitable for this country with other paddocks of the following:—

C.C. 1.

- 2 lbs. Phalaris Bulbosa.
- 6 " Perennial Rye Grass.
- 2 " Wimmera Rye Grass.
- 3 " Prairie Grass.
- 2 " Perennial Red Clover.
- 1 " Subterranean Clover.

16 lbs. Per acre.

Plant March-August.

C.C. 2.

- 3 lbs. Cocksfoot.
- 2 " Tall Fescue.
- 2 " Italian Rye Grass.
- 3 " Perennial Rye Grass.
- 2 " Wimmera Rye Grass.
- 2 " White Clover.
- 1 " Subterranean Clover.

15 lbs. Per acre.

Plant March-August.

For renovating Paspalum pastures N.C. 7 is recommended, and on the higher country with colder climates N.C. 3; the mixtures N.C. 5, and N.C. 6, recommended for swampy land and heath country, respectively, on the North Coast, are also applicable to this area, also N.C. 8 for temporary pastures on alluvial soils.

FOR THE SOUTH COAST

(between Sydney and Eden) and similar districts with a climate which is temperate and usually free of extremes, and with a good average rainfall well spread and fairly certain.

S.C. 1.

For soil of fairly good quality. This mixture should provide feed all the year round.

- 4 lbs. Cocksfoot.
- 4 " Tall Fescue.
- 8 " Perennial Rye Grass.
- 2 " Perennial Red Clover.
- 1 " Subterranean Clover.
- 1 " White Clover.

20 lbs. Per acre.

Sow Feb.-July.

S.C. 2.

For good quality soils. This should supply an excellent growth of feed in the cooler months.

- 3 lbs. Phalaris Bulbosa.
- 4 " Wimmera Rye Grass.
- 3 " Prairie Grass.
- 4 " Tall Oat Grass.
- 2 " Perennial Red Clover.
- 1 " Subterranean Clover.
- 1 " White Clover.

18 lbs. Per acre.

Sow Feb.-July.

S.C. 3.

Specially designed for poor quality hill country.

- 3 lbs. Cocksfoot.
- 2 " Wimmera Rye Grass.
- 2 " Sheep's Burnet.
- 2 " White Clover.
- 1 " Subterranean Clover.

10 lbs. Per acre.

Sow Feb.-June.

S.C. 4—An alternative mixture for hill country with rather poor soils.

- 2 lbs. Rhodes Grass.
- 3 " Wimmera Rye Grass.
- 2 " Tall Oat Grass.
- 1 " Subterranean Clover.

8 lbs. Per acre.

Sow Feb.-June.

N.C. 1, 3, 4, 5, 6, 7, 8

(To be used in conjunction with above.)

N.C. 1 and N.C. 4 should be used as alternatives in these districts, especially for summer use, when the pastures S.C. 1 and S.C. 2 can be spelled. For renovating Paspalum pastures N.C. 7 is recommended, and

on the higher country with colder winters N.C. 3. The mixtures N.C. 5 and N.C. 6, suggested for swampy land and heath country, respectively, on the North Coast, are also applicable to this area, also N.C. 8 for temporary pastures on alluvial soils.



Improved pasture area on a well-known horse stud in N.S.W.

PASTURE SPECIFICATIONS (Continued)

FOR NEW ENGLAND AND NORTHERN TABLELANDS

(of which Walcha, Armidale, Glen Innes and Tenterfield are representative). Climatic conditions comprise mild and cool summers, severe winters with heavy frost and occasional snow, rainfall good, falling mostly in late spring and early summer, winters dry.

In addition to the sowing of introduced grasses as mentioned below, the *Danthonia* (Wallaby or White Top) and *Chloris* (Windmill) type of native grasses should be encouraged, as they provide winter feed and are very palatable.

N.T. 1.

For black soil country which has been well prepared.

- 4 lbs. *Phalaris Bulbosa*.
- 1 „ *English Trefoil*.
- 1 „ *White Clover*.
- 1 „ *Perennial Red Clover*.

7 lbs. Per acre.

Sow March-August.

N.T. 2.

An alternative to N.T. 1 if *Phalaris* is scarce or hard to obtain; suited for black soil country which has been properly prepared.

- 2 lbs. *Phalaris Bulbosa*.
- 10 „ *Perennial Rye Grass*.
- 2 „ *English Trefoil*.
- 2 „ *White Clover*.
- 2 „ *Perennial Red Clover*.

18 lbs. Per acre.

Sow March-August.

N.T. 7.

For soils not suitable for *Lucerne*, *Bokhara Clover* is proving of value. It does well in the Tenterfield district for example, and makes good temporary pasture if sown in autumn on well prepared land; it is advisable to keep this clover away from wheat lands.

12-15 lbs. *Bokhara Clover*.

Sow Feb.-June.

N.T. 3.

For red soil country which is usually lighter and more friable, the following is suggested:—

- 4 lbs. *Tall Fescue*.
- 6 „ *Cocksfoot*.
- 2 „ *Tall Oat Grass*.
- 1 „ *English Trefoil*.
- 1 „ *Perennial Red Clover*.

14 lbs. Per acre.

Sow March-August.

N.T. 5.

Potato land and other rich cultivation land which is desired to be put into pasture for three to four years can be planted with the following:

- 10 lbs. *Perennial Rye Grass*.
- 2 „ *Perennial Red Clover*.

12 lbs. Per acre.

Sow March-August.

N.T. 4.

Specially made up for poor quality land on ridges.

- 2 lbs. *Tall Fescue*.
- 1 „ *Meadow Fescue*.
- 1 „ *Kentucky Blue Grass*.
- 3 „ *Wimmera Rye Grass*.
- 3 „ *Cocksfoot*.
- 2 „ *Sheep's Burnet*.
- 1 „ *English Trefoil*.
- 1 „ *Subterranean Clover*.

14 lbs. Per acre.

Sow March-August.

N.T. 6.

For soils of sufficient depth for *Lucerne* which do not become wet and very cold during the winter.

- 3 lbs. *Phalaris Bulbosa*.
- 2 „ *Lucerne*.

5 lbs. Per acre.

Sow March-August.

N.B.—When several specifications are suggested for a particular district (other than those for special conditions) they are largely complementary one to another, and therefore it is advisable to sow different paddocks with the different mixtures, thus providing for continuance of feed and variation of diet. The different grasses and clovers vary as to their productiveness at the different seasons of the year. In soils of fair quality or where preparation of the land for sowing has been good, heavier sowings may sometimes be made with advantage.

FOR UPPER HUNTER RIVER

and similar districts, of which Scone, Muswellbrook, Quirindi, Denman and Merriwa are representative. Climatic conditions comprise warm summers, winters cool with frosts; good average rainfall well spread, but occasional hot dry spells.

H.R. 1.

For the lighter types of soils of good depth.

- 2 lbs. *Lucerne*.
- 2 „ *Rhodes Grass*.
- 3 „ *Wimmera Rye Grass*.

7 lbs. Per acre.

Sow March-June.

H.R. 2.

For light soils not deep enough for *Lucerne*.

- 2 lbs. *Wimmera Rye Grass*.
- 1 „ *Subterranean Clover*.
- 2 „ *Sheep's Burnet*.
- 2 „ *Rhodes Grass*.

7 lbs. Per acre.

Sow March-June.

H.R. 3.

Lucerne, particularly on the heavier black soils, gives in conjunction with the natural grasses excellent results. On the heavier soils 4 lbs., and lighter soils 2 lbs. per acre, has been found sufficient.

Sow in autumn or early spring.

ARTHUR YATES AND CO., LTD.,

PASTURE SPECIFICATIONS (Continued)

FOR CENTRAL TABLELANDS

(Bathurst, Orange, Mudgee, Carcoar and Manildra Districts.) Typical climatic conditions are warm to hot summer days, but usually cool nights. Winters cold with very heavy frosts and occasional snow. Rainfall fair to good and usually well spread throughout the year.

C.T. 1.

For rich soils of fair depth. Should provide good all-year-round grazing.

- 4 lbs. Phalaris Bulbosa.
- 2 „ Lucerne.

6 lbs. Per acre.

Sow March-June.

C.T. 2.

An alternative to C.T. 1 and has the same characteristics.

- 6 lbs. Tall Fescue.
- 6 „ Cocksfoot.
- 2 „ Lucerne.

14 lbs. Per acre.

Sow March-June.

C.T. 3.

May be used for rather lighter land, makes most growth in the cooler months.

- 2 lbs. Tall Oat Grass.
- 4 „ Wimmera Rye Grass.
- 1 „ Lucerne.
- 1 „ Subterranean Clover.

8 lbs. Per acre.

Sow March-June.

C.T. 4.

The native grasses included in this mixture are very valuable for summer feed and are very drought-resistant. Those interested may be able to make their own arrangements to have seed saved from suitable country as they are rarely obtainable commercially.

- 2 lbs. Coolah Grass (*Panicum prolutum*).
- 2 „ Warrego Summer Grass (*Panicum flavidum*).
- 1 „ Giant Panic (*Panicum antidotale*).
- 2 „ Lucerne.

7 lbs. Per acre.

Sow at any favourable time, usually late summer and early autumn.

C.T. 5.

Recommended for the colder portions of this class of country with a better rainfall—the Orange district for instance.

- 6 lbs. Perennial Rye Grass.
- 4 „ Cocksfoot.
- 1 „ Phalaris Bulbosa.
- 2 „ Perennial Red Clover.
- 1 „ White Clover.

14 lbs. Per acre.

Sow March-August.

C.T. 6.

This is specially made up for potato land and rich cultivation land which is being worked in rotation and makes a good temporary pasture.

- 6 lbs. Perennial Rye Grass.
- 2 „ Perennial Red Clover.

8 lbs. Per acre.

Sow March-July.

C.T. 7.

For low-lying areas where a supply of moisture is always present but which must be well drained, the following is suggested.

- 10 lbs. Perennial Rye Grass.
- 2 „ White Clover.

12 lbs. Per acre.

Sow Feb.-August.

C.T. 8.

Suitable for the warmer and more sheltered portions of this and similar districts not subject to heavy frosts. For sowing on average wheat country of fair depth.

- 4 lbs. Rhodes Grass.
- 2 „ Lucerne.

6 lbs. Per acre.

Note.—Rhodes Grass may be omitted if desired.

Sow February-May.

C.T. 9.

A paddock of Sudan Grass is very useful and we suggest about 8 lbs. per acre, sown in October-December, as a valuable paddock for pasture, hay or silage. It must be understood that Sudan is an annual plant and must be sown each year. For summer feed in these districts this is about the only recommendation that can be made, other than the establishing of a Lucerne plot.



Wimmera Rye Grass—left, portion of a paddock on a large Victorian sheep station; right, under test in our Trial Grounds

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

PASTURE SPECIFICATIONS (Continued)

FOR SOUTHERN TABLELANDS

(as represented by Moss Vale, Crookwell, Bombala and Braidwood Districts, also for Tumut, Batlow and Tumbarumba Districts), of which the following climatic conditions are typical. Summers mild and temperate; winters severe, with heavy frosts and sometimes snow; rainfall very good, particularly in the winter months.

The most important and native grasses for these districts are Wallaby or White Top (*Danthonia*) and Wheat Grasses (*Agropyrum* Species); the former only is obtainable commercially.

The mixtures C.T. 1, C.T. 2 and C.T. 3, as mentioned for Central Table-

lands, are suitable for these districts in addition to the following, and the better rainfall and cooler conditions permit sowings to be made into the early spring.

S.T. 1.

For good average soils.

6 lbs. Perennial Rye Grass.

S.T. 1—(cont.)

4 lbs. Cocksfoot.

3 „ Perennial Red Clover.

2 „ Sheep's Burnet.

15 lbs. Per acre.

Sow Feb.-Aug.

For Bombala, Adaminaby and similar very cold localities the following are recommended in addition to the above:

S.T. 4.

4 lbs. Cocksfoot.

2 „ Wimmera Rye Grass.

2 „ Subterranean Clover.

2 „ Sheep's Burnet.

10 lbs. Per acre.

Sow Feb.-June.

S.T. 2.

Suitable for flats.

6 lbs. Perennial Rye Grass.

S.T. 2—(cont.)

1 lb. Phalaris Bulbosa.

3 „ Cocksfoot.

1 „ White Clover.

1 „ Subterranean Clover.

12 lbs. Per acre.

Sow Feb.-May, and if weather favourable, Sept.-Oct.

S.T. 3.

Suitable for the hills.

3 lbs. Perennial Rye Grass.

2 „ Wimmera Rye Grass.

2 „ Subterranean Clover.

3 „ Sheep's Burnet.

10 lbs. Per acre.

Sow Feb.-June.

For some parts of the Cooma district the following additional mixtures are even more suitable than those previously mentioned for southern tablelands, as the summers are cool, winters long and severe, often with heavy snow, and the rainfall rather light.

S.T. 6.

For summer grazing.

4 lbs. Lucerne.

Sow Feb.-May or Aug.-Oct. if conditions are suitable.

S.T. 5.

For low-lying areas where moist conditions prevail.

S.T. 5—(cont.)

6 lbs. Perennial Rye Grass.

4 „ Cocksfoot.

2 „ White Clover.

12 lbs. Per acre.

Sow Feb.-May or Sept.-Oct.

FOR SLOPES AND OTHER DISTRICTS WEST OF THE TABLELANDS

Generally speaking, these areas have a typical inland climate, with a rainfall from 20 ins. to 25 ins. per annum which, in the Riverina, falls mostly in the winter, while further north it is more evenly spread over the year.

For these areas the most important work is the preservation and encouragement of the native pastures and this depends on:—

1. An intelligent conception of good and useless varieties.
2. The subdivision of paddocks and judicious stocking.
3. The prevention of over-stocking particularly after a drought period. Good grasses should be encour-

aged in every way possible such as by allowing them to seed and scattering seed over denuded areas. Seed of these valuable native grasses is rarely obtainable commercially.

In addition to the above, however, the following introduced grasses are proving successful:

W. 1.

For the slopes and the eastern Riverina, the following mixture is suggested:—

2 lbs. Lucerne.

1 „ Wallaby Grass (*Danthonia*)

2 „ Rhodes Grass.

2 „ Wimmera Rye Grass.

7 lbs. Per acre.

Sow March to June.

W. 5.

For average wheat country of fair depth the following should give good grazing:—

2 lbs. Per acre Lucerne.

Sow in autumn and early and late winter.

W. 2.

Where soil is too shallow for Lucerne.

2 lbs. Subterranean Clover.

1 „ Wallaby Grass.

2 „ Rhodes Grass.

2 „ Wimmera Rye Grass.

7 lbs. Per acre.

Sow March to June.

W. 4.

Where Lucerne does not thrive owing to shallowness of soil, use the following:—

3 lbs. Rhodes Grass.

3 „ Wimmera Rye Grass.

6 lbs. Per acre.

Sow March to June.

W. 3.

For the nearer north-western and central western plains the following should prove suitable, especially on old cultivation paddocks.

2 lbs. Lucerne.

2 „ Rhodes Grass.

2 „ Wimmera Rye Grass.

6 lbs. Per acre.

Sow March to June.

W. 6.

For temporary summer grazing the following is recommended:—

8 lbs. Per acre Sudan Grass.

Sow Sept.-Dec.

W. 7.

For pastures in irrigation areas, see special paragraph page 8.

ARTHUR YATES AND CO., LTD.,

PASTURE GRASSES

WIMMERA RYE GRASS

(*Lolium Rigidum* var. *Strictum*)

An annual species of the Rye Grass family which is exceedingly hardy and drought-resistant and is proving of the utmost value to Australian agriculture. Its value as a pasture plant is considerably enhanced by the fact that it is readily eaten by all classes of stock, and that it adapts itself to varying climatic conditions. As the seed germinates freely and rapidly, Wimmera Rye Grass is easily sown and will reseed each year. This grass has proved satisfactory in the following representative districts:—Grafton, Dorrigo, Kempsey, Taree, Richmond, Camden, Berry, Moss Vale, Curlew, Werris Creek, Inverell, Singleton, Bathurst, Orange, Rylstone, Wattamondara, Captain's Flat, Cooma, Gundagai, Tumut, Parkes, Milvale, Temora, Milbrulong, Urana, Yerong Creek, Illabo, Coonamble, Trangie and Nyngan, Western Districts of Victoria, South Australia and Western Australia.

Being an annual it will provide green feed for seven to eight months in the colder part of the year, after which, although it dries off, it is very nutritious as dry hay, the seeds remaining attached to the dry straw for a long period.

To the sheep and wheat farmer Wimmera Rye Grass is undoubtedly useful, its special value lying in the fact that when grass seeds are plentiful farmers with areas of Wimmera Rye have clean paddocks into which to turn lambing ewes, and so are able to market lambs free from Spear and Barley grass seeds. In many localities lambs have to be marketed before they are at their best in order to escape grass seed; but the seed of Wimmera Rye has no detrimental features, and does not damage the wool or eyes of sheep.

A special feature of Wimmera Rye is the fact that the plants retain their seed well, the long outer glume holding the seed firmly against the seed stem. Sheep readily eat these dry seed stems, and thus obtain a certain amount of grain with their roughage.

In the hands of a careless farmer, Wimmera Rye Grass may give trouble in wheat areas; if the seed is plentiful in land sown with wheat the grass will check the growth of the crop considerably. When the area is required for cultivation, the grass can be prevented from seeding and eradicated by heavily stockpiling the paddock with sheep. Any plants which grow on the subsequent fallow can be controlled by feeding them off and working the fallow. A cultivator with broad tines, such as a duck-foot, should be used when the seedlings are just showing through the ground, and at frequent intervals later if required.

Wimmera Rye makes good quality hay and cuts into attractive-looking chaff. Rats and mice do not damage the hay or grain stacks, as the seed is small and does not tempt them to the same extent as oats and wheat do. This feature makes the grass an excellent standby for times of drought. Farmers and graziers who have cut and fed a mixture of Wimmera Rye chaff with either wheaten or oaten chaff consider that stock do better on the mixture than if fed wheaten or oaten chaff alone. This is accounted for by the fact that the Wimmera Rye would be carrying a large quantity of seed, which would make the mixture more nutritious. The grass retains an excellent

colour, even when the seed is well matured, and there is also an absence of discoloured flag on the sample of hay produced.

The seed should be sown in March or April to obtain the best results, but the planting period may be extended to May or even June if it is necessary to wait for favourable conditions. On the poorer classes of soil in the Coastal districts 2 to 3 lbs. per acre are sufficient when mixed with other grass. In wheat districts it should only be sown on areas which are to be given over to grazing for a number of years and 3 lbs. per acre is sufficient, while if 2 lbs. of lucerne are used with it, the quality of the grazing is greatly improved.

Wimmera Rye Grass is also useful for broadcasting on rough country, and will germinate readily if sufficient litter, etc., is on the ground to hold the seed and furnish a cover. It must be remembered that although this grass persists for many years on account of the free seeding habit, it will soon be eaten out if rabbits are plentiful, as they will prevent it from seeding.

For districts with good Winter rainfall a paddock of Wimmera Rye Grass and Subterranean Clover mixed makes an excellent pasture.

It is practically impossible to identify seed of Wimmera Rye Grass in comparison with that of the well-known Italian and Perennial Rye grasses, which are, of course, of much less monetary value and of no use in hot districts, where Wimmera is so successful. Therefore, we strongly urge farmers to buy their supplies from a reputable and reliable seed house and not risk being disappointed with inferior seed.

ITALIAN RYE GRASS (*Lolium Italicum*)

Italian Rye Grass, being a biennial, comes away very quickly from seed, and when sown in the Autumn will give a large quantity of feed by the Spring. For this reason it is largely used in districts with good rainfall, such as the N.S.W. Coast and Tablelands, for providing quick grass. In some districts it is common practice to broadcast the seed through the maize fields about February-March, thus giving good winter feed, while the stock being encouraged to forage amongst the maize roughage, eat a certain amount and tread much into the soil. When the paddock is ploughed up in the Spring it is greatly benefited by the added humus of grass roughage and animal manure. Italian Rye Grass should be included in all grass mixtures for the above type of climate, as it acts as a nurse crop for the slower growing perennial grasses and also helps to exclude weeds, etc., while the other grasses are becoming established. It is one of the most valuable grasses for meadow hay, as it grows quickly and gives a good bulk; its erect habit of growth makes easy cutting, as it tends to lift up the other grasses and clovers. Being a biennial it only lasts two years, but it is free seeding, and if not overstocked at seeding time will persist for some years. Sow 1 to 1½ bus. per acre with Clovers or Grain; if with other grasses, as recommended in the tables on pages 10 to 13.

Yates' Extra Heavy Re-machined Italian.—This is a first-class strain, thoroughly re-cleaned, of the ordinary Italian, and has given excellent results wherever grown.

PASTURE GRASSES (Continued)



Dept. of Agric. Photo
Sheep on the Tablelands Pastured on a mixture of Perennial Rye Grass and Perennial Red Clover.

PHALARIS BULBOSA

Owing to harvesting difficulties, ample supplies of the true *Phalaris Bulbosa* are difficult to obtain and most uncertain, and therefore the cost is necessarily high. As the seed can only be identified by experts, and even then with difficulty, large quantities of that almost useless annual *Phalaris Minor* are sold by unscrupulous and inexperienced people as the true strain. Purchasers, in their own interests, are urged to be most careful of the source and origin of any seed they procure. Although, of course, we cannot give any guarantees, we, in keeping with our reputation, only stock seed from areas we know.

Each year *Phalaris Bulbosa* is required in greater quantity as its merits become better known to farmers and graziers. It is considered by many to be superior to Rye Grass and Cocksfoot for our average Tableland conditions. It has a particular value in its ability to withstand hard, cold conditions; in fact, it makes wonderful growth in the winter months. It is a grass we particularly recommend for the tableland country of N.S.W., and for similar conditions in other States. It is succulent, palatable, and a strong grower. It is deep-rooting, and, when once established, is drought-resistant, and forms a splendid permanent pasture which stands hard grazing. Once thoroughly established, if kept well grazed, it forms a close turf ideal for sheep.

Perhaps nowhere else in the State has such interest been taken in pasture improvements as on the Northern Tablelands north of Armidale, and practically the whole district is unanimous concerning the merits of *Phalaris Bulbosa* as an all-the-year-round pasture grass for their conditions. In grazing trials conducted by the Department of Agriculture at Glen Innes Experiment Farm during four years this wonderful grass has carried two and a quarter sheep per acre continuously and without any spells; and, further, these sheep grew much better and put on more weight than those on the native pasture carrying only one sheep per acre; the latter sheep also had access to stubble and fodder crop residues. We strongly re-

commend farmers in all temperate and cold districts to sow, at least, small trial plots of this wonderful grass. It promises excellent results in the grazing lands of our Tasmanian Seed Farm.

This grass also makes good hay if cut as soon as the flower heads are forming. About 5 lbs. per acre is a reasonable sowing, and we suggest that about 2 lbs. per acre of White Clover or $\frac{1}{2}$ lb. to 1 lb. per acre of Subterranean Clover be included either with *Phalaris* alone or with *Phalaris* and other grasses in mixture.

PERENNIAL RYE GRASS

(*Lolium Perenne*)

On those parts of our coastal and tableland country, where a high and regular rainfall may be looked for, this is one of the very best of the introduced grasses, and is a specially good winter grass for the dairy farmer. In moist, rich, clay soils it is practically permanent, but best results are obtained in looser soils by re-sowing at intervals of, say, five to ten years. Sow one and a half to two bushels per acre if used alone. A small proportion should be used in most mixtures for coastal and tableland climates.

Yates' A.Y. Old Pasture Perennial.—This is a very fine perennial variety of the same type and quality as that hitherto offered as Poverty Bay Rye Grass, which was a variety originated by us many years ago. But owing to misrepresentation and substitution in connection with the use of this name we have deemed it advisable to change to the above descriptive name. The seed offered under this brand is saved in a dry climate from true perennial type pastures and therefore more hardy and long lasting under Australian conditions than most of the Perennial Rye Grass generally sold, which is saved in cool wet districts. All the seed we offer is carefully tested, heavily re-machined and is of high percentage of germination and purity.

Yates' Re-machined Perennial.—This is the next best long lasting strain and is superior in this respect and in weight of seed to a great deal of the Rye Grass offered.

ARTHUR YATES AND CO., LTD.

PASTURE GRASSES (Continued)

COCKSFOOT (Dactylis Glomerata)

One of the hardiest of the perennial grasses and one of the most useful. It should be included in all grass mixtures sown in the coastal and tableland districts of New South Wales, and in other parts of the Commonwealth with fair average rainfall evenly distributed throughout the year. Being one of the hardiest of the perennial grasses, it is very useful for sowing on hill country and second quality ridges; it also has a large carrying capacity on good soil. It is inclined to grow tussocky, but judicious grazing and occasionally allowing it to seed itself down will counteract this to a certain extent. Two to eight pounds per acre should be included in grass mixtures.

Our seed is heavy and thoroughly machine-cleaned and will give a good germination and a quick and even catch.

SHEEP'S BURNET

This fodder plant has proved itself suitable for our dry inland country, where it would be impossible to succeed with the finer grasses. It is one of our best drought resisting plants, and remains green when every other fodder is burnt up, springing again with light showers that would not have the slightest effect on the grass; it is absolutely permanent, and when once established does not die out. It is a herb, not a grass, grows from 15 to 18 inches high, and has a long tap root, which enables it to stand dry weather and grow when other plants with shallower roots dry off. It grows both in summer and winter, giving the greatest rush of feed in the spring. All animals are fond of it, and thrive well on it, but it is particularly suitable for sheep. It is excellent for sowing on land which is too shallow for Lucerne. Sow ten to twelve pounds per acre. Burnet may, with advantage, be included in Grass Seed Mixtures for poor soils; being a deep rooter it does not rob the surface-rooting grasses, and succeeds where better grasses fail.

PRICES

Prices are as set out in our Current Price List at time of booking order. The Price List now current is sent you herewith and later issues will be posted promptly on receipt of enquiry. They are issued about every three to five weeks.



Prairie Grass in conjunction with Perennial Rye Grass, Subterranean Clover and Red Clover on Bungarribee Manor Horse Stud Farm.

TALL FESCUE (Festuca Elatior)

A strong growing coarse grass, now considered to be distinctly valuable. While it may not have quite the feeding value of some of the finer grasses, it is extremely hardy, withstands drought well, is adaptable to nearly all classes of soils, and if kept fed down, is quite palatable. It keeps green when other grasses are dried up and thus gives that valuable green pick which helps to keep stock healthy. We would recommend a proportion of this in all mixtures to be sown on any land except low, moist flats. In the wet districts of New Zealand, Tall Fescue takes Ergot very badly which causes sickness and abortion in cattle. This trouble has not occurred in the drier climate of this country, but we would suggest that it should not be sown anywhere near swamps.

TALL OAT GRASS (Avena Elatior)

This grass is now becoming very generally used in pasture mixtures and is proving very hardy and most successful. It has a deep rooting system, which protects it against drought, and it quickly spreads when once established. It is a good winter grass and a quick grower. Stock may at first be averse to it, but when used to it eat it readily, especially if sown in mixture with other grasses. Customers are recommended to try this grass in land which is rather light in character for other artificial grasses, and we would be pleased to have reports after testing.

It withstands heat of summer and the cold of winter, starts very early in spring and continues to give good grazing over a long period. It has been grown successfully in the Department's Trials in Coastal and Tableland district. It is best included in mixture with other grasses at the rate of from one to three pounds per acre.



A Valuable Area of Tall Oat Grass in the Crookwell District.
Dept. of Agric. Photo

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

PASTURE GRASSES (Continued)

PRAIRIE GRASS (*Bromus Unioides*)

For rich loamy land with a good rainfall, this is a most valuable grass, particularly for the dairyman. It gives a wonderful growth of succulent palatable fodder. It is essential that Prairie Grass be not constantly grazed, as this will kill it out. When a fair growth has been made it should be stocked heavily, and when fed down spell again until a good new growth has been made. By having paddocks well subdivided this system of grazing can be carried out. It will prove for grazing almost as valuable as a crop of oats, with the advantage that it will last for several years without re-sowing. On soils liable to be tramped very hard and which remain in this set condition it will not respond to this treatment so well. To maintain a good covering it should be allowed to seed itself down at the end of each growing season. It is excellent to use a little in pasture mixtures to give a good body of feed while the Perennial Grasses are establishing themselves. If sown with Lucerne on good land the combination will give wonderful grazing if spelled regularly after being closely grazed. The Prairie Grass gives good results in winter when Lucerne is dormant.

Sow twenty to forty pounds per acre if used alone. When used in mixtures, use one to three pounds per acre.

Yates' Finest Bright Re-machined.—A heavy grade plump seed of a very high percentage of germination and purity.

WALLABY GRASSES (*Danthonia Species*)

One of the hardiest of our native grasses. Grows in a wide variety of soils and climates. Especially adapted to the poorer soils unsuited to other grasses, splendid for sheep.

Mr. F. Turner, in his work, "Australian Grasses," says of this variety:—"It grows both in the coastal districts and in the arid interior; it is one of the most nutritious grasses of Australia, and, unlike most other species of this genus, it will grow more or less all the year round. Stock of all descriptions are remarkably fond of it. The seed germinates readily after showery weather in the autumn and spring months. On good soil the roots of this grass penetrate to a depth which enables the plant when growing in the arid interior to withstand long spells of dry weather." The seed is very light, and a small quantity will cover a good breadth of land; we would strongly recommend that two or three pounds per acre should be added to all mixtures for any soil or climate.

KIKUYU GRASS (*Pennisetum Clandestinum*)

We undoubtedly have in Kikuyu a grass of which the quality and capabilities are hardly yet realised by farmers and pastoralists. It is a native of British East Africa and is a perennial grass with a strong system of surface and underground runners which quickly root at the joints and then send up fresh growth. On this account it is very quick spreading where the winters are not too severe, and also remarkably drought resistant.

It should succeed and be profitable to grow in almost any district where the rainfall is 20 inches or over. It is of particular value for poor sandy soils where it is usually difficult to grow anything but weeds, though naturally the richer soils will give correspondingly better results.

It does not seed in Australia, therefore it can only be distributed by means of cuttings or rootlets, which



A much valued paddock of Rhodes Grass on the Bungarribee Manor property in Blacktown District, near Sydney.

we can supply at any time from late winter on. Plantings are usually made during the spring, summer and early autumn months. It is recommended to plough the land, opening up furrows six feet apart, and dropping in the rootlets every three feet. At this rate about 2500 plants will suffice for one acre.

For prices, see Current Price List.

Approximate cost of Postage and Packing—Per 100, 1/-; per 50, 9d.

KENTUCKY BLUE GRASS

(*Poa Pratensis*)

One of the best winter grasses for tableland districts with a good rainfall, yielding a quantity of fine feed in the autumn, winter and early spring. It dies right down in the summer, but soon springs again after rain. It has a creeping habit, resembling Couch, and if once introduced, will become a permanency. The celebrated Blue Grass regions of America, so noted for their horses, take their name from this grass, which forms the bulk of the pastures there. As this grass is very delicate, and easily burnt up while in its younger stage, we recommend that it be sown in the early autumn only.

RHODES GRASS (*Chloris Gayana*)

A very strong growing grass, which, rooting at every joint, soon covers a large area. Excellent for moist situations and hot climates, but succeeds well in a large range of situations and climates, except where heavy frosts are experienced. It is quick germinating after rain, but needs soft moist weather for an ideal "strike." It makes growth rapidly and is very palatable to all stock. When well established it is remarkably drought resistant. It is very largely used for surface sowing after clearing and burning off scrub in the coastal areas, and for this purpose there is nothing better. In some of the inland districts of Queensland Rhodes Grass is proving of the utmost value, and has also been of value in some parts of the Western slopes of N.S.W., especially in areas where summer rains predominate, not only in mixed pastures, but as a special grazing crop when planted with Lucerne, say four pounds of Rhodes and two or

(Continued overleaf)

ARTHUR YATES AND CO., LTD.,

PASTURE GRASSES (Continued)

three pounds of Lucerne per acre. When sown alone six to ten pounds per acre is sufficient, if good quality seed is used.

MEADOW FESCUE

(*Festuca Pratensis*)

An excellent perennial grass for districts with fairly regular rainfall, and much relished by all stock. This grass has given good results under observation in many districts, and should be included in all grass mixtures for districts with good rainfall where long dry spells are unusual.

PASPALUM DILATATUM

(Yates' Prime "Hand Shaken")

Does well for a few years planted in conjunction with Rhodes Grass in coastal districts after a burn. The seed should be sown during spring, summer, or early autumn, say from August to April. Succeeds best where moist warm conditions prevail, but will prove a very profitable crop even where a moderate rainfall is experienced, and under these latter conditions it is not so likely to become rank and difficult to deal with. Once introduced into swampy land Paspalum soon covers it with a thick mat and gives good grazing where the land would otherwise be useless. It is an excellent practice to sow a few pounds of Perennial Red Clover and White Clover with the Paspalum, as these provide feed when the latter is more or less dormant. Sow ten to twelve pounds of Paspalum per acre. Special quotes for large quantities.

PASPALUM COMPRESSUM

(Also known as Dorrington Grass or Carpet Grass)

A dwarf compact growing variety of Paspalum, proving of great value for poor sandy ridgy stretches of country in districts where Paspalum Dilatum does well; makes well matted roots. Sow five pounds per acre.

COUCH GRASS

(*Cynodon Dactylon*)

Stands heat and drought well and is specially suited for dry and sandy spots on the coast, and mild districts of good rainfall where other grasses will not flourish. It is also of great value for binding loose soil, sand banks, etc. It should not be planted near cultivation paddocks, as it is difficult to eradicate. Unless the ground is warm and moist, the germination is often unsatisfactory; therefore, sow in warm weather after good rains, using ten pounds per acre.

In warm climates this grass is very largely used for lawns, making a close, fine turf, and withstanding considerable heat and drought. For this purpose one to two pounds of seed are sufficient for about ten yards square.

ELEPHANT GRASS

(*Pennisetum Purpureum*)

Although not strictly speaking a pasture grass, this recent introduction has proved to be a valuable acquisition and a fodder plant of considerable value. This is a vigorous growing plant, attaining a height of 12 to 15 feet. It stands cutting well, tests made by the Department of Agriculture showing a return of 50 tons and more of green fodder per acre per year, and also that this grass is of good feeding quality and that stock relish it, but it must not be allowed to get too high and coarse. It may be either grazed or cut, and shows a very satisfactory food value by analysis. Milk yield and tests are well maintained. Elephant

Grass is a summer grass and gives good results, even if only on poor land. The cuttings should be planted three feet apart in and between the rows.

For prices, see Current Price List. Approximate cost of postage and packing on cuttings—Per 100, 2/9; per 50, 1/9; per 25, 1/3; per 12, 9d.

GRASSES FOR SWAMPY AREAS



Illustration shows Water Meadow Grass giving excellent feed in swampy country.

WATER MEADOW GRASS (*Poa Aquatica*)

—This is used rather extensively on marshy land, and swamps in Gippsland. The plant is fairly nutritious, but rather coarse. We can usually supply root stocks.

POA (Glyceria) FLUITANS (Manna Grass or Floating Sweet Grass). Finer and shorter than *P. aquatica*; does specially well in association with Lotus major.

PASPALUM DISTICHUM (Water Couch). Most useful for salty marshes.

Customers should give us a week or 10 days' notice to enable us to arrange supplies of above.

CHEWING FESCUE

(*Festuca Rubra* Var.)

This grass has been grown in New Zealand with success on poor, light, as well as heavier lands; it has formed a good sward where no other grass would succeed. It is permanent, and throws up a useful amount of feed in the early spring, particularly good for sheep. We would recommend that a little of this grass be included in all mixtures for permanent pasture in coastal or tableland districts, or, if planted alone, allow fifteen pounds per acre.

FESCUE (Fine Leaved)

(*Festuca Ovina Tenuifolia*)

This grass is not recommended as a pasture grass, but is excellent for lawn purposes, giving a very fine, even sward.

AGROSTIS SPECIES

These grasses are used fairly largely for lawns, golf greens, etc., and are commonly known as Bent Grasses. Their value for pasturage is low, except in cold, harsh situations. We stock—*A. tenuis* (Brown Top or Rhode Island Bent); *A. vulgaris* (Red Top).

TEFF GRASS

(*Eragrostis Abyssinica*)

An annual summer growing grass in very great favour in South Africa, especially where summer rains are prevalent. It must be re-sown every year like Sudan Grass, but we regard the latter as much more suited to Australian conditions.

OTHER GRASSES

We also stock the following, which, however, are of minor importance except for special situations or purposes:—Timothy, *Poa trivialis*, *Poa nemoralis*, Meadow Fox Tail, Crested Dog's Tail, Yorkshire Fog, Rib Grass or Lamb's Tongue (not a member of the grass family).

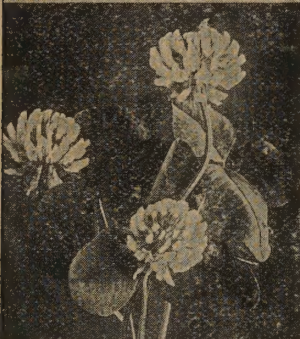
SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

CLOVERS

FOUR USEFUL CLOVERS



Yates Superfine
Perennial Red Clover



Yates Superfine
White Clover



Trifolium Incarnatum
(Crimson Clover)



Berseem
(Egyptian Clover)

Landholders, especially those in areas where a fair rainfall is experienced, are realising more and more the great value of the Clovers, as **Soil-renovators**, as well as fodder crops of the highest quality, either alone, in pasture, or sown with other green stuff or hay crops. They also help to provide the other plants with available nitrogen, thus stimulating the general growth.

For renovating worn-out land, and for keeping valuable farming land in proper condition, nothing will do more good than the Clover family (or, if preferred, other Legumes, such as Field Peas, Field Lupins and Soy Beans, and in warm climates Cow Peas). When ploughed in they add a most valuable manure in the form of nitrogen, which is gathered from the atmosphere. When the crop is ploughed in the nitrogen is made available, while the foliage, stems and roots, form necessary "humus," which gives "life" to the land. For the efficient growth of all legumes an ample supply of phosphates is essential. Soils deficient in this element should be treated with "super." or other phosphatic manure.

The addition of one or other of the Clovers, when laying down pastures or sowing greenstuff or hay crops, will provide a much **better balanced ration** of which stock are very fond; and when the crop is done the Clover will often give a good picking for a considerable period, afterwards being ploughed in for **green manure**.

Clovers succeed best in good "sweet" land and usually respond well to superphosphate. Sow 12 lbs. to 15 lbs. per acre alone, or, if with pasture grasses, 2 lbs. to 3 lbs. per acre. Generally speaking, Clovers should be sown in the autumn, but in good seasons successful results can be obtained from spring sowing in coastal and tableland districts.

YATES' A.Y. SUPERFINE WHITE CLOVER (*Trifolium Repens*)

This is used perhaps more than any other for sowing down with Pasture Grasses. It spreads quickly, especially in moist situations. Widely used on the North Coast of N.S.W. in Paspalum and Rhodes Grass Pastures, giving a splendid pick during the winter when these two grasses are more or less dormant. Succeeds in a wide variety of soils and climates.

Though in dry years it will thin out and perhaps almost disappear, the first good spring will bring an enormous growth, as the seeds remain in the ground until the necessary moisture occurs for its germination. We do not recommend this clover for the comparatively drier parts of the State, but it is undoubtedly one of the hardiest clovers and will persist under quite hard conditions.

YATES' SUPERFINE PERENNIAL RED CLOVER OR COW GRASS (*Trifolium Pratense Perenne*)

Increased interest is now being taken in this Clover as it is now found that it will do well in almost any district of good rainfall. It is a vigorous grower and is splendid for milk production. When sown with oats which are used for grazing it comes away strongly in the spring and keeps up the flow of milk as the oats gradually ripen off. It is not as perennial as White Clover, but will make an excellent pasture for two or three years, and for some time will give a much larger yield than White Clover; especially is this so in the colder districts where it is giving excellent results. It is recommended that this clover be used for practically all pasture mixtures for coast and tableland conditions. From one to two pounds per acre should be included in grass mixtures. When sown with oats use two to three pounds per acre. Planting alone use ten pounds per acre.

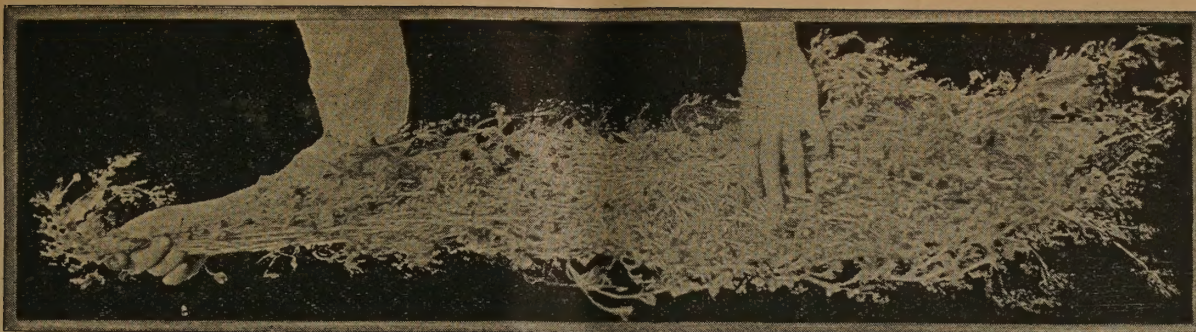
ALSYKE (*Trifolium Hybridum*)

Combines to some extent the qualities of the Red Clover and White Clover. It produces more forage than White Clover, but will not stand as much heat; but, however, is rather better on wet soils. It makes most of its growth during the winter and spring and stands frost better than any other.

STRAWBERRY CLOVER (*Trifolium Fragiferum*)

An excellent variety for low, wet, swampy land subject to floods or inundations through the backing up of tide water. This plant has a trailing habit, and thrives where no other Clovers and very few Grasses will grow; in our opinion, it should be associated with Water Couch. If one pound or so per acre is sown in suitable situations it will very soon spread. It is very largely grown in portions of Gippsland, where the land is swampy, and is found to be very fattening. Cattle do particularly well on it.

ARTHUR YATES AND CO., LTD.,



A 5ft. growth of Subterranean Clover after a warm, moist Spring.

SUBTERRANEAN CLOVER

(*Trifolium subterraneum*)

An annual Clover which makes its growth in the cooler weather starting off with the first autumn rains, and has a dense spreading habit and is very free seeding. A proportion of the seeds are deposited under the soil, hence the name Subterranean. The seeds are contained in a soft case which does not hang in the wool, and, being large, are readily licked up by the stock in the dry weather when the ground is bare, just as they do the seed of the ordinary Burr Trefoil.

The plant can readily be identified by its bluish green hairy appearance and most of the leaves have a brown blotch at the base.

Subterranean Clover seems to be very adaptable to all classes of soil and a wide range of climates. It will do in most districts where Burr Trefoil makes a growth every year, but it does not seem to stand quite as much heat.

It is particularly adaptable where a good autumn rainfall is assured, as it then starts early in the autumn and continues right through the winter to the late spring. It makes its maximum growth in the early spring when it forms a dense carpet over the ground, which dries off and cures as a natural hay, giving excellent feed. The hay contains a high proportion of seeds, so is highly nutritious. Owing to its free seeding habit, Subterranean Clover spreads rapidly and in suitable districts soon becomes one of the main features of the pasture. It can be easily controlled, however, in arable land by cultivation, and, being a legume, it naturally enriches the soil.

As both Subterranean Clover and Wimmera Rye Grass are free seeding annuals, they are the easiest and probably the most satisfactory combination for the sowing of broad acres at the present time. If they are planted after the first autumn rains and fed off only lightly for the first year, special care being given them at seeding time, a much improved permanent pasture should be assured in all districts with a good autumn and spring rainfall.

The feeding value of Subterranean Clover seems to be very high, and all classes of stock do exceptionally well on it.

Owing to the way it grows in a dense mass it is

excellent for sowing in land covered with undesirable weeds or top growth, as it spreads rapidly and tends to choke them out.

On properly prepared land Subterranean Clover should be sown at the rate of 2-3 lbs. per acre, thus giving a good growth immediately; however, it can be cheaply introduced on grass land by scattering about 1 lb. per acre and then, if possible, scratching the surface soil with a harrow, but sowing at this rate it may take two or three years to become properly established. On large holdings it is a good practice to carry a small quantity of this clover on inspection trips and to scatter a little seed in all the spots where the soil is inclined to be a little loose, such as old stump holes and rabbit warrens or creek washes.

Most of the country in Australia which enjoys a regular winter rainfall is deficient in Superphosphate. Subterranean Clover is particularly partial to this manure and wherever possible it should be spread over the clover—it helps it to start early in the autumn and increases the growth of feed right through the growing period.

In general, it can be taken that Subterranean Clover can be planted in all districts south of the main Western line of New South Wales and in those districts north of this where good autumn and spring growth is made. It has practically no disadvantages, with the possible exception, that, being such a strong grower, it may tend to choke out other grasses and thus make the pasture unbalanced. It is an excellent practice to sow it on the poorer hills where it grows quickly and helps to protect the land from washing.

CLUSTER CLOVER (*Trifolium Glomeratum*)

An annual very much like Burr Clover and thrives in the same conditions and soils. While it hardly gives as much feed as the latter, it has no injurious burr and therefore is excellent for sheep country. It is easily introduced by scattering seed over the land when it is not too hard.

ENGLISH TREFOIL (*Medicago Lupulina*)

A perennial which does best in cold districts and deep soils. It is recommended for these localities when other clovers will not thrive. It provides good bottom herbage through the winter and lasts well in pastures.



Illustrating how Subterranean Clover responds to Phosphatic Manure. Foreground, no manure; background, 1cwt. "Super" per acre. Dept. of Agric. Photo

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

CLOVERS (Continued)



This photograph amply demonstrates the value of introducing Clover into our natural pastures.

TRIFOLIUM CERNUUM

(Drooping Flowered or Gingin Clover)

This is an annual clover which seeds itself down like Subterranean Clover, so that once introduced it is permanent. It is an excellent clover, making heavy growth in the autumn and winter months, and is particularly suitable for moist or even wet soils. It will withstand a large amount of inundation during the winter months. In drier soils it is not so successful as Subterranean Clover, but it makes an excellent complement to that variety as it does much better in the damper soils where Subterranean Clover fails. Makes excellent hay, which should be cut when the plant is in flower, as the ratio of fibre increases as the seeds develop. It has no burr which would damage wool and is therefore no detriment to sheep. Is particularly partial to Superphosphate. Owing to its free-seeding habit in suitable districts it spreads very rapidly, therefore it should be a good clover to scatter in moist, cold, uncleared land where an increase in fodder is wanted. Due to the difficulty of harvesting and to small supplies the seed is expensive, but sowing at the rate of about 1 lb. to the acre should be amply sufficient to introduce in suitable localities.

BURR or "NATIVE" TREFOIL

(Medicago Denticulata)

This is an introduced member of the Clover family, but has become so widespread that it has earned the title of "Native." It is now one of the commonest plants in N.S.W., and furnishes a tremendous amount of feed. It grows with the first good autumn rains, giving a heavy yield of lush green fodder throughout the winter and spring. With the approach of summer the plant ripens off and the seed, falling on the ground, then forms a most valuable and highly con-

centrated food. This the sheep will lick up from the ground and thrive on. Country that grows this Trefoil is essentially fattening country. The burrs are a great disadvantage in purely wool growing country.

BURRLESS or BUTTON TREFOIL

(Medicago Orbicularis)

This is a variety of Trefoil Clover which has attracted attention in Tamworth and other Northern districts. It is very similar in its growth and appearance to our Native Trefoil or Burr Clover, but the seed is not enclosed in a burr; this is manifestly a great advantage to wool growers. However, the plant is not as hardy or as prolific as the well-known Burr Clover. It is an annual, but seeds itself so profusely that it comes up every spring, and is permanent when once introduced.

LOTUS (Varieties)

LOTUS CORNICULATUS (Birdsfoot Trefoil) — A perennial which will probably do well in coastal and tableland districts. It is said to withstand dry weather better than Red Clover and needs less lime in the soil. It is used both in pastures and as a fodder crop.

(A customer in Nth. Queensland where clovers are hard to grow, reports great success with this Lotus.)

LOTUS MAJOR (Greater Birdsfoot Trefoil) — A perennial like the above, but appears to do best in damp soils. Seed should be sown in early spring and lightly covered with a chain or brush harrow.

LOTUS ANGUSTISSIMUS (Narrow-leaved Lotus) — A hardy clover which does well in rough country and should be very suitable for sowing on burns. In trials at Glen Innes it proved very good, giving fine summer feed.

ARTHUR YATES AND CO., LTD.,

CLOVERS (Continued)

Three Vigorous Annual Varieties for Fodder or Hay

TRIFOLIUM INCARNATUM (or Crimson Clover)

This is an annual, a quick grower, and useful as a rotation crop or for hay. It is not of much use for grazing, but it is usually considered that it does not produce as much feed as rape which has largely replaced it. The root system is particularly efficient in producing nitrogen bacteria and therefore it should be useful in certain conditions as a soil improver in orchards. As stock do not eat it readily, owing to its hairiness, it is mostly used as a rotation crop in cattle and dairying districts.

BOKHARA CLOVER (*Melilotus Alba*) (or White Sweet Clover)

A biennial extremely useful for renovating, green manuring, and preparing land for the introduction of lucerne. The plant makes very big root growth, and when it dies out after the second year it rots down very quickly, leaving the soil well opened up.

Bokhara can be grazed profitably by all classes of stock, the fodder value, by analysis, being extremely high. There is practically no danger of bloat with

this Clover, but it is likely to taint milk. It is also an excellent honey plant.

If used as a rotation crop it can be ploughed in either the first or second year according to circumstances. Seeding does not take place until the second year, and so long as this is prevented there is no danger of the plant getting out of control.

This plant should not be grown in wheat paddocks, as the seed will taint flour. Sow 8 lbs. to 10 lbs. per acre broadcast, or 5 lbs. in drills.

BERSEEM (or Egyptian Clover) (*Trifolium Alexandrinum*)

An annual Clover suited to the more temperate districts, which must be sown in early autumn, as it makes its growth during the autumn, winter and early spring months. Sown in early autumn in a favourable locality, it will give two and even three cuttings of valuable Lucerne-like green-stuff during the winter and early spring. It can also be sown in the autumn with oats, and after being grazed for a time it can be cut in the spring with the oats for hay. It should be tried in all temperate districts where Lucerne does not do well.

SOWING RAPE

Yates' "A.Y." Broadleaf Dwarf Essex

Sowing Rape is one of the most profitable stock fodders for fattening. In addition, it is a very useful rotation crop and soil renovator on account of its vigorous deep rooting habit which penetrates subsoils to a considerable depth. It is one of the best annual fodder plants for sheep in Australia, and with the widespread recognition of the value of combining sheep and wheat, it is now becoming very important on the wheat farm, not only for sheep feed, but also as a rotation crop for renovating wheat land.

If paddocks, which are showing signs of exhaustion under wheat, are ploughed and a crop of Rape sown, say early in March, it will give a lot of feed during the winter and following spring. If, during the following summer, the remains of the crop and animal droppings are ploughed in, the land will be very much enriched, and when sown with wheat again, a greatly increased yield will result. The roots of the Rape tend to break up and enliven the soil just below plough depth and this greatly renovates the paddock. Rape is equally good for sheep, pigs or cattle, so long as it is not given in quantity to milking cows, as it is apt to taint the milk.

Sheep put on to Rape fatten very quickly; even old broken-mouthed ewes, that would starve on an ordinary pasture, very soon put on flesh, and are fit for the butcher. They should, however, be sent to market as soon as they are "topped off" as, if put back on the grass they very soon lose condition again. As a means of fattening lambs, especially weaners, for market, there is nothing to equal Rape.

Rape should be eaten off heavily and "spelled"; the plants then soon recover and give a second or third crop almost as good as the first; in fact, if sown in the early autumn it should give several months' feed.

Poultry farmers are finding a small patch of Rape a valuable asset, and for this purpose small succes-

sional sowings should be made through the autumn and again in the spring.

Some growers prefer to sow it with Rye Corn, say half-bushel of Rye and two pounds of Rape; others sow it with mustard, using half-a-pound with four pounds of Rape per acre. The inclusion of mustard corrects the occasional tendency of Rape to scour.

We recommend sowing in February, March or April, after the good autumn rains, but as early as possible after the middle of February. It can also be sown with advantage in early spring, especially in the cooler districts, as it is extremely hardy. The land should be deeply ploughed and well worked, but if sown on stubble land, it would be enough on light soils to stir the surface thoroughly with a disc harrow. Sow three pounds per acre in drills, or four to six pounds broadcast. If drilled, so much the better, but the depth of the hoes must be adjusted so as not to sow too deeply. Where a machine is not available it may be sown broadcast by mixing with several times its bulk of dry soil, which will materially help to distribute the seed evenly; or it may be evenly distributed with a Seed Sower. We do not recommend that Rape should be sown on poor hungry land, as it will not succeed; it requires good soil and deep cultivation, and will well repay the labour expended in preparing the land thoroughly. Where manure is employed in growing Rape (and it is a crop which quickly responds to such attention) we would recommend one rich in ammonia—say blood manure or fine bonedust; superphosphate is also used with great success.

As there are several strains of Rape, some very much better and yielding larger crops than others, also, as many of the cheaper samples are tainted with wild mustard or yellow weed, we would strongly advise growers to buy our re-cleaned seed, and note that each bag is sealed and branded.

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

LUCERNE

Some Notes on its Treatment as a Grazing Crop with special reference to Wheat Lands on the Slopes and in the Riverina.

The earliest records available of lucerne and its use as feed for stock show that it was first found in the south-east of Central Asia, and from this region it was taken to Greece by the Persians and grown there as a food for their horses and cattle when they invaded that country about 490 B.C. As lucerne is a native of Central Asia there should be no doubt as to its ability to withstand dry conditions.

NO NECESSITY FOR HEAVY SOWINGS.

Two of the reasons advanced by some pastoralists for not sowing large areas of lucerne are (1) that seed is expensive, and (2) that it is necessary to sow 10 to 12 lbs. of seed per acre. This is not so. Sowings of as little as 2 lbs. per acre have been successful, and indeed are recommended for districts of only medium average rainfall; even on good average wheat country only 6-8 lbs. per acre is necessary.

SOWING THE SEED.

Lucerne seed, being small, should be only lightly covered with soil (about $\frac{1}{2}$ in.); if buried more than one inch the percentage of germination is noticeably reduced. When using the light sowings recommended in the previous paragraph the best quality re-machined seed only should be used and the land should be well prepared, fallowed, and after sowing, well firmed, so that the seed will make good contact with the soil.

The usual method adopted in sowing seed on large areas is to use the wheat drill or the "combine," while on small areas a hand broadcasting machine is operated or the seed is scattered by hand.

If a grass-seed box is attached to the drill, the lucerne seed should be sown through that attachment, allowing the seed to scatter in front of the hoes or discs of the drill; a light harrow, wire-netting, chain, or bushes attached to the footboard of the drill will effectively cover the seed.



Typical Grazing Lucerne in Manildra District.

Where the seed is mixed with superphosphate (56 lb. of the fertiliser should be used per acre) and sown through the fertiliser box of the drill or "combine," the distributing tubes should be pulled out of the "feet" of the machine, allowing the mixture of seed and fertiliser to fall on the surface of the ground. If necessary, a harrow should be used or other means adopted of covering the seed.

Where this method is being used, do not mix the seed more than a few hours before sowing, otherwise the germination may be detrimentally affected.

In cases where lucerne seed is being sown with the last crop of wheat or oats to be grown, and a grass-seed box is not available, the lucerne should be mixed with superphosphate and sown through the fertiliser box. A very light sowing should be made of wheat or oats as the cereal tends to crowd out the lucerne. As shallow a sowing as possible should be aimed at, as deep planting is detrimental to lucerne seed. In some cases two plantings are made, the wheat being sown first at the usual depth for such seed and the lucerne planted shallower at the second drilling. Where the wheels of the drill or "combine" do not sink too deeply into the prepared land, the distributing tubes can be left in the "feet" of the hoes or discs, provided the latter just penetrate the soil; put the machine into gear by setting the gear lever in the first notch, or allow it to run free between the "in" and "out" of gear notches. This will give just sufficient penetration of the soil to satisfactorily cover the seed. When seed and superphosphate mixed are being sown, only a small quantity of the mixture should be put in the fertiliser box at a time, as this ensures a more even distribution of the seed over the area to be planted.

On friable self-mulching soil, lucerne is being established satisfactorily for pasture purposes by broadcasting the seed per medium of top-dressing machines, harrows following to give effective covering, or sheep may be used to lightly tramp the seed into the ground. In some cases the land is given a shallow cultivation prior to seeding.

Autumn sowing is generally to be recommended, as the plants have a chance of becoming well established in the cool seasons, but there are many factors which have to be taken into account, such as period of greatest weed growth, severity of winter frosts, etc., and from our records we know that just as much lucerne seed is sown in the Spring as in the Autumn.

FEEDING-OFF LUCERNE STANDS.

After the plants have made 9 to 10 inches of top growth, the area can be fed-off. Such feeding-off should be done by stocking at the rate of eight to ten sheep per acre, in order to eat the growth off rapidly. Remove the animals as soon as the feed becomes somewhat short, otherwise they are likely to graze the lucerne too harshly and injure the young crowns of the plants.

Hoven or bloat is likely to occur in sheep and cattle at any time if the animals are hungry when first turned on to the paddock; the trouble is accentuated if the lucerne is wet with rain or dew. Once sheep become accustomed to feeding regularly on lucerne, however, very few deaths occur. A mixed pasture of grasses and lucerne minimises the danger to a considerable extent as a variety of feed is available. Having grass paddocks, to which the sheep have access, adjacent to the lucerne areas will result in a better balance of feed than where only lucerne is available. The practice considerably reduces the danger of hoven, and also results in the life of the lucerne plants being extended, as the stock are not feeding on them continuously. It is the young, suc-

ARTHUR YATES AND CO., LTD.,

LUCERNE AS A GRAZING CROP (Continued)

culent growths of lucerne which cause most losses from hoven, and whenever possible to do so allow the feed to become more mature before grazing it off.

In most of the grazing districts where lucerne is available, we find, in average seasons, a plentiful growth of barley grass (*Hordeum murinum*) during winter and spring months, and some summer grasses during the remainder of the year. Such growth provides a mixture of pasturage and a well-balanced feed, and tends to reduce danger of hoven.

Tests have shown that lucerne should be allowed to reach full bloom before cutting or feeding-off at least once or twice a year, as at this stage the production of organic food in the root is generally accelerated and it is stored in sufficient quantities to enable the plant to make a new strong top growth while the root growth is also quickened. It has been definitely shown that continual feeding or cutting of the plants before the growth is mature, gradually lessens their productivity.

CARE OF ESTABLISHED FIELDS.

It is advisable to have reasonably small paddocks, and put large numbers of sheep on at a time to eat the area off in at least ten or twelve days. If the paddocks are large, temporary fences that can be erected rapidly and moved easily should be utilised for subdivision purposes. Water can be supplied by means of water carts and troughing. Where sheep are continuously grazing on a paddock of lucerne for lengthy periods, the young shoots are severely eaten back, the crowns become damaged, and the vitality of the plant is considerably impaired. In paddocks that are grazed the surface soil sets hard with tramping, and cultivation should be carried out at least twice a year.

Top-dressings of 1-1½ cwt. superphosphate per acre should be made at least every second year. The fertiliser should be applied in July or August, working it in with a cultivator or heavy tripod grass harrow.

CEREALS FOR WINTER FEED ON THIN LUCERNE STANDS.

Where lucerne stands have been utilised for grazing for a number of years and are thinning out, an

autumn sowing of 20 lb. of wheat or 30 lb. oats per acre, on easily worked land, will provide a considerable quantity of winter grazing during the cereal crop's period of growth of five or six months.

By light sowings and having a proportion of the paddock under natural pasture, the difficulty can be overcome to a considerable extent. Sections of the pasture paddocks which are reasonably free of timber could be worked up and planted, and temporary fences erected until the lucerne is well established.

CARRYING CAPACITY.

In a test at Cowra, lucerne on average wheat country (not river flats) carried at an average rate of 3½ sheep per acre for a twelve month's period, during which just under 20 inches of rain were recorded; only 6 inches falling during the first six months of the test.

In a test at Trangie, lucerne carried an average of nearly 2½ sheep per acre during a period of 2 years. The total rainfall was 32½ inches for the two years, but only 16½ inches were recorded in the first eighteen months of the test.

The above instances show conclusively that from a grazing standpoint the resistance of lucerne to dry conditions is one of its outstanding qualities.

Seed Supply.—For over thirty years we have been handling lucerne seed in large quantities, and it follows naturally that we have gained a wealth of experience.

YATES' BROADLEAF GIANT-UPRIGHT LUCERNE

In sealed bags, is re-machined and tested seed of extra prime quality of a superior type of N.S.W. grown lucerne, which is saved on selected farms in those districts in which, owing to special natural conditions, there has been evolved a long-standing drought-resisting strain, which has proved itself for Australian conditions. Supplied in 25 lbs. and 50 lbs. net SEALED bags.

LEGUMINOUS CROPS For Autumn Planting

IN the agriculture of the world the Leguminaceae (Legume family) rank next in importance probably to the Gramineae (Grass family). For providing a fodder of the highest nutritive quality, for renovating worn out land and for keeping valuable farming land in proper condition, nothing is more useful than the various species of Legumes which are now in commercial use.

FIELD PEAS

This crop is an excellent fodder for sheep, pigs and other stock, but we think its main value is when grown as a combined "legume-cereal crop," particularly with oats or wheat. If sown early with oats they can be grazed off once or twice during the winter and then let go dry for hay. The addition of this crop to the green feed and hay makes a much better balanced ration and it is very palatable to stock. Loams and clay loams of an open nature are the most suitable.

If sown alone they may be grown to maturity for "topping off" and when cut fed to pigs, or they may

be cut green just after flowering, for cattle or pig feed. This crop is classed among the best of the soil improvers. Even if only the roots are ploughed in the soil is greatly enriched.

A favoured method of growing them on coastal dairy farms is to sow the field peas between the rows of late maize just prior to the last cultivation. When the maize ripens the dying leaves allow ingress of light and air and rapid growth is made. After feeding off, the roots and top growth, which has been trodden down, are ploughed and help to maintain the soil fertility for the following maize crop.

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

LEGUMINOUS CROPS (Continued)

FIELD PEAS (Continued)

Field Peas, though not so hardy as Tares or Vetches, are earlier maturing, usually cheaper in price, and one grower reports that when grown with a cereal it will stand the trampling of grazing cattle better than will Tares under similar conditions. Field Peas can be sown in the autumn or spring, but in mild districts we prefer autumn sowing.

Sown alone $1\frac{1}{2}$ to 2 bushels per acre broadcast, or say 30 lbs. in drills 2 feet apart. Sown with cereal crop, try $\frac{1}{2}$ bushel Field Peas with $1\frac{1}{2}$ bushel oats or wheat per acre.

Care should be taken to sow the seed deeply enough (2-3 inches in normal soils).

We usually stock the Grey, Blue, and Dun varieties of Field Pea, the Grey and the Dun being perhaps the most popular. In addition we now have supplies of the favourite Black-eyed Susan variety which is in great demand in N.S.W.



Vicia dasycarpa in full growth (see next column)

TARES or VETCHES

These are important members of the legume family and are largely grown both for fodder and as a winter green manure. In both cases it is preferable to sow in conjunction with a cereal crop, though they may be used alone as green manure. When used for feed the combination of legume and cereal gives a well balanced ration, and the upright growth of the cereal supports the Tare, which is a climbing or trailing plant. Cows milk well on Tares and it is excellent fattening crop for pigs.

In some of the North Coast districts this crop, either alone or in combination with Rye, Oats, or Barley, is sown on the maize flats, fed off during the winter, and in the spring the residue ploughed in for green manure. Not only does this provide excellent winter fodder but it also maintains the fertility of the flats, thus giving better yields in the succeeding crop. In order to encourage a quick and heavy growth, we advise the application of Superphosphate with this crop.

Tares succeed in a wide variety of soil and districts, so long as there is a good winter rainfall. Seed should be sown in early autumn from February onwards. We would suggest a sowing of from $\frac{1}{2}$ bus. to 1 bus. Tares

with a bushel or half-bushel of Oats, Rye, or Barley (or a mixture of the three). The ratio will vary according as the main crop is intended to be the cereal or the legume. The Department of Agriculture recommend 30 lbs. Tares with a bushel of grain. The seed can be mixed and broadcast or it can be drilled in. If sown alone, up to 2 bushels per acre is ample. Golden Tares is the variety most used and is the one which we usually stock, but this year supplies are practically unprocureable and we recommend the following:—

TWO NEW VETCHES

We are pleased to introduce these for the first time this year. They have shown great promise in trials conducted by the Department of Agriculture, and have given greater yields than any of the old varieties. We suggest that trials of these be made to ascertain their value under customers' local conditions. As the seed is much smaller sow about half the quantity used for ordinary Golden Tares.

VICIA DASYCARPA (Woolly Pod Vetch)

This is similar to Hairy Vetch, but the fragrant flowers are purple, and it is 2-3 weeks earlier, taking about 5 months to mature. It makes better growth in cool weather than do other varieties and, as it has a procumbent habit, is useful for choking out weeds.

VICIA ATROPURPUREA (Purple Vetch)

In many ways this is similar to above, but in tests has given a slightly greater bulk of feed. It should prove satisfactory as a green manure crop in citrus orchards, and in tests has done well in coastal regions as well as on inland irrigation areas.

NEW ZEALAND BLUE LUPINS

Annuals which for green manuring provide one of the best crops for ploughing in, especially in our cooler districts. They are not suitable for green-feed for animals and under certain circumstances are liable to be poisonous. When practicable we recommend autumn sowing, but they will succeed if sown in early spring. Lupins grow very rapidly and produce a large quantity of top. Sow at the rate of 2 bushels per acre. For small trials 3 lbs. will sow an area of 10 square yards (10 yds. x 10 yds.).

KUDZU VINE (*Pueraria Thunbergiana*)

A perennial legume only adapted for poor soils near the sub-tropical coast. We can only supply in packets; but as the plants grow quickly and send out long runners which root at every joint, they can then be severed and transplanted over the required area. Packets, 1/-.

HORSE or TICK BEANS

A variety of Broad Bean, the seeds of which form excellent feed for horses, but their main usefulness is as a winter green-manuring crop, as they grow well on cold wet soils. Sow about 2 bushels per acre.

WEST AUSTRALIAN BLUE LUPINS

Reports of the value of these lupins in W.A. have caused an enquiry for them in N.S.W. This is due to a misunderstanding of their limited use. In W.A. they are only used on poor sandy country with a 14-15 inch rainfall, and which only grows rough scrubby feed. It is not considered that they would be of any use in N.S.W., as where grass will grow it is much better.

ARTHUR YATES AND CO., LTD.,

YATES' Re-machined SEED GRAIN

IT PAYS TO SOW YATES' RE-MACHINED SAMPLES

MANY farmers do not yet recognise the importance of procuring the prime and purest samples of grain when sowing for hay, grain or green fodder, and for the sake of a few pence per bushel thousands of bags of the most inferior seed oats are annually sent away to our dairy farmers to grow fodder. The infesting of land with weed seeds when, by paying a little extra price, seed which has been thoroughly re-dressed is obtainable, is surely a poor policy. See also illustration on opposite page.

The sowing of Re-cleaned Farm Seeds means **CLEANER CROPS, SURER CROPS, HEAVIER CROPS** and what is perhaps of the most importance—**CLEAN LAND.**

SEED OATS

Prime Heavy Re-cleaned Samples.

The importance of sowing only re-cleaned and re-graded Seed Oats for green fodder as well as for grain is now beyond the experimental stage. The high cost of labour and high land values make it more than ever necessary to get the most out of the cultivated land. It is better to have ten acres of a really good crop than twice the area giving only an indifferent yield.

Algerian Oats are grown largely for feeding dairy

cows and with successive plantings will provide feed for eight months of the year. To get the best results the cultivation land should be divided into three or four small paddocks; the crop which has been trodden down soon recovers after a few weeks' spell, but continual grazing is wasteful, not good for the crop or the cows. We recommend that a dressing of one cwt. of Bone-dust or Superphosphate be used, also five or six pounds of Clover seed per acre be planted with the Oats. This will



Sunrise Oats grown from Yates' Re-machined and Tested Seed in a normal season.

give a more balanced ration and so increase the milk flow; it will also help to maintain the fertility of the land, and give a good stubble feeding during the following autumn.

The Algerian variety is of finer growth, stands up to trampling, and is of strong root growth, which prevents it from being easily pulled out. It stands the greatest amount of feeding off, but if the earlier varieties, such as Sunrise or Mulga are used, good green feed will be had much earlier. On account of their quick-growing capacity, these varieties are also very useful for planting late in the season. By making two sowings of these early varieties about two months apart, continuous grazing will be had from early autumn right into the late spring.

If shut up fairly early in the spring good hay crops can be gathered in addition to the winter grazing.

Yates' Extra Prime A.Y. Re-machined Samples are the very pick of the lines offering, thoroughly re-

cleaned and graded by our special machinery. Every grain should produce a strong, well-nourished plant under proper conditions.

LIST OF VARIETIES

Algerian—See foregoing, the variety most used for all round purposes, stools well, is very hardy and a great drought resister.

Sunrise—An early oat of medium coarse straw, very suitable for coastal districts; moderate stooler. It should be sown more thickly than Algerian. An excellent oat for silage or green fodder, giving a great bulk of feed; it is not so good for hay as Mulga, as the stems are not so fine. Stands feeding off well and is much less liable to rust than Algerian.

Mulga—A very early maturing selection from Sunrise, and better for grazing and fodder in the warmer inland districts. It also does well on the coast and tablelands. It is particularly palatable to stock, is excellent for grazing, as it stands feeding off well; can be sown either early or late. In the former case a lighter sowing is made. It is an excellent oat for grain and produces a fine plump sample in warm districts where Algerian will not do well. For grain purposes it is somewhat weak in the straw, so that it should be sown late, when it does not grow too rank and the straw will be found quite strong enough, or, if planted early, is kept well fed off in the early part of the season.

Guyra—A very early dual purpose oat with medium fine purplish straw. Is excellent for chaff, and the produce weighs well in the bag; it seems specially suitable for cooler districts where it gives a fine yield of plump short dark brown grains. It is about as susceptible as Algerian to rust, it stands feeding off well and is much liked for green fodder on the south coast of New South Wales, and should do well on the tableland districts.

Warrigal—Selected from Sunrise in 1921. This Oat is essentially a grain sort, the seed being large, white and remarkably plump. Recommended as a white feed Oat.

Lachlan—A fairly recent variety which has proved excellent for grain in the warm inland districts.

Ruakura—An early variety that has been practically superseded by the newer early sorts.

Tartarian (Side Bearing)—Late. One of the earliest white grained varieties, and good for green fodder, especially on the cold highlands.

Dun—Late. Produces hay and grain of fine quality, largely used for feed by race-horse trainers.

Heavy Black—For green feed in cold climates.

Heavy White—A green fodder Oat for moist cool climates.

RYE CORN

Rye Corn is very hardy and is largely used for winter feed, especially where the climate is severe, as it grows better in severe weather than any other cereal. It is excellent for feeding; many experienced

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

YATES' Re-machined SEED GRAIN



Top—Prime, heavily graded, Yates' Re-machined and Tested Seed. Bottom—Weak, shrivelled and broken grains and Weed Seeds, which have all been removed. See also introduction at top of previous page.

farmers preferring to use it in this way, as they find their stock do best while the Rye Corn is young.

It will stand grazing all the winter, and rapidly grows again after being eaten down. It is also used for mixing with Tares, the Rye Corn serving to hold the Tares off the ground. Rye Corn comes into use very early. It is also sown to advantage mixed with Rape. The straw is very valuable for thatching, and some farmers sow the headlands of their hay paddocks with Rye Corn for thatching the stacks. Sow about two bushels to the acre.

Black Winter Rye—The best sort for early winter feed, strongly recommended.

Mammoth White—The most largely used variety, excellent for grazing off and the best sort for collar making.

SEED WHEATS

Prime, Heavily Re-cleaned Samples.

Grown from Select Stocks.

Wheat is largely used for green fodder and for hay as well as being the world's most important grain crop. It stands dry conditions better than almost any other grain and is therefore of great value for fodder and for hay, as well as for grain in districts of low rainfall. It will often give good crops in seasons when oats are a failure. The only varieties we stock in quantity are those most used for green feed and hay, but occasionally we have supplies of the newer grain varieties. The advantages of sowing only whole plump grain free of pinched broken seeds, weed seeds and foreign matter, is now proved to be worth many, many times the slight extra cost per acre for Re-cleaned Seed; in unfavourable seasons it may mean the difference between a crop and a failure.

Sow up to 2 bushels per acre together with a dressing of 56 lbs. to 112 lbs. superphosphate per acre, according to location and quality of the land.

LIST OF VARIETIES

Florence (Very Early)—Stools fairly well, growth vigorous and compact, suitable for hay or grain, but especially valuable for green feeding, grazing and soiling in our coastal districts.

Thew (Early)—Has gone right out of favour, being superseded by Florence and similar varieties. We do not now stock it.

Write for Current Price List (and samples if required) stating quantity wanted.

Canberra (Early)—A very productive grain wheat and one of the best for late sowing in hot dry districts. Rather slender straw.

Waratah (Early)—One of the newer wheats which is coming into great prominence as a high yielding grain variety. In the various wheat-growing competitions throughout N.S.W. it has been consistently among the leaders.

Hard Federation (Mid-Season)—A favourite variety in the Central Tablelands, Slopes and Northern districts for grain production. Hard grain, stands feeding off. A very good all-round wheat.

Soft Federation (Mid-Season)—Although rather susceptible to rust and to bleaching, this is a very popular mid-season wheat. It is a high yielding grain variety and very drought resistant.

Marshall's No. 3 (Late Mid-Season)—A variety as valuable for hay as it is for grain. It is a good stooler and should be sown very early. Does well throughout the wheat belt.

Yandilla King (Late)—Another sort which can be grown for both hay and grain and does well in any part of the main wheat belt. Stools well.

BARLEYS

Barley is the earliest of the grain crops to mature and in this earliness lies also its great value as a green fodder crop. It is one of the sweetest fodders grown and is relished by all classes of stock.

White Skinless.—The earliest variety and very valuable for its quick growth. It affords two cuttings and should be grazed after each; the close feeding seems to cause it to come away with renewed vigor.

Trabut—This variety has not proved as valuable as was anticipated. We recommend Cape Barley as being more suitable.

Cape—This is the variety most generally used for green fodder. It grows quickly, stools very well, and gives large bulk of feed; a five row bearded type.

English or Malting Barley, two rowed and bearded, is mostly used for grain for malting purposes, but can also be used for green feed.

ARTHUR YATES AND CO., LTD.,

SUNDRY FODDER CROPS

FOR AUTUMN PLANTING

CABBAGE, CATTLE—In cool climates the very large late varieties have a value as cattle feed. Sow in late summer and autumn in seed bed, and afterwards transplant. Sow about half-pound for each acre to be planted out.

CHOU MOELLIER or MARROW KALE—Variety of Kale. Of extremely vigorous growth and yields enormously. The leaves should be cut, not pulled off the stem, and fresh growths are then formed immediately. The stem is also quite free of woody fibre, and is greedily eaten by all classes of stock; it can be chaffed after the crop of leaves is exhausted. Sow in early autumn, two pounds to the acre if drilled, or one pound is sufficient if transplanted; the drills should be two feet apart, allowing twelve to fourteen inches between the plants. It does well even in dry seasons, is a splendid milk producer, and does not taint the milk even if fed alone. Trial packets, 6d.

THOUSAND-HEADED KALE—Few plants will give so great a quantity of feed per acre as Thousand-Headed Kale, and all animals eat it greedily. These should all be sown in a seed bed, and afterwards transplanted in two and a half feet between the plants and three feet between the rows. For the best results sow in summer or early autumn. Trial packets, 6d.

CANARY SEED—Largely grown for bird seed. It may also be used for hay purposes, requires similar culture to wheat; sow 17 to 20 lbs. per acre. We stock Queensland-grown seed, and extra large Morocco-grown seed.

CHICORY—Valuable for its deep rooting action and withstanding droughts. Usually sown in mixtures for second-class land.

LINSEED (N.Z. grown)—This is grown either for seed, for oil purposes, or for the fibre for linen making, but requires special conditions, which intending planters should inquire into if putting in large areas.

MUSTARD—For a quick green fodder for fattening lambs, Mustard can be recommended. Sow eight pounds per acre. It is also frequently mixed with rape. It is ready a few weeks after sowing.

SWEDE TURNIPS

Swedes can be grown cheaply and with comparative ease on much of the upland country of N.S.W., not only for stock, but for the vegetable market. For sheep they make an excellent fodder, especially as they become available during the winter and early spring when most needed. Sowing should be made in February, March and April at the rate of two to three pounds per acre in drills about two feet six inches apart. Up to 1 cwt. of superphosphate will cause considerable increase in weight and vigor of crop.

Yates' Champion Purple Top—A standard globe-shaped variety, which gives wonderful returns and is the standard sort for growing for market. Our strains are unexcelled, the crop comes in evenly and the Swedes are well shaped, large, and keep well.

Yates' Monarch—A large tankard shaped variety, with purple top. Heavy yielder and good keeper. Excellent for stock or market growing.

FIELD TURNIPS—Valuable for providing stock feed in the winter and early spring months. They are quick growers, especially the white fleshed sorts. They can be planted when it is too late to sow Swedes, and will yield heavy crops. Sow about two pounds per acre in drills. We stock the leading varieties, both white and yellow fleshed.

MANGOLDS and SUGAR BEET—Wonderful milk producers, and yield immense crops. Sow about September-October; in warm climates an autumn sowing will give a fine winter crop. Plant in well worked clean land, in drills thirty inches apart, to allow horse cultivator to work, and when up, hoe to remove any growth of weeds, and if necessary, thin out to allow the roots to develop. Five pounds per acre of Mangolds and about eight pounds of Sugar Beet are fair sowings. The best varieties are:—

Yates' Mammoth Long Red.	Golden Tankard.
Yates' Champion Yellow Globe.	Long Yellow.
Sugar Beet Wanzleben.	Giant Half-Sugar Mangold.

SALT BUSH—In the drier climates the Salt Bushes make excellent feed, and every effort should be made to preserve them. Unfortunately the better creeping variety (*Semibaccata*) is easily eaten out but can be reintroduced by careful seeding. Old Man Saltbush, if sown in selected areas, makes a good drought reserve. They are easily raised from seed or cuttings. One pound should seed an acre.

KURRAJONG (*Sterculia Diversifolia*)—Many stock owners have to fall back on anything at all edible for the stock during drought, and, as a last resort, the foliage of this tree has considerable value, as well as being very ornamental and enhancing the value of property.

TAGOSASTE (So-called Tree Lucerne)—Suitable for hedges of breakwind and a stand-by against droughts.



A Heavy Crop of Swedes

For Prices, write for Yates' Current Price List.

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

A Profitable Side Line!—

MARKET GARDEN CROPS

IN districts within reasonable distance of the centres of population and with a fair average rainfall, it is often well worth while for the farmer to reserve some of his best land for vegetable production for market.

The essentials for successful market gardening are good soil, good rainfall or facilities for irrigation, rotation of crops, intelligent use of fertilisers and regular cultivation.

Few crops average out as well as Cauliflower, Cabbage, Pea, Bean, Swede, etc., if grown under suitable conditions. It is wise first to decide what crops are best suited for your conditions and then to grow them consistently on a well planned rotation. In this way you will obtain better returns than the grower who is constantly changing over and thereby often meeting a "glut" of the particular line he is growing.

For best varieties, time to plant and for cultural directions, farmers should be guided by local experience and the information given in Yates' Annual and Yates' Garden Guide (1s., post free).

The higher returns regularly obtained by experienced men are evidence that skill and care are very necessary in this branch of farming. Where conditions of soil and season are not favourable, and where varieties have been sown unsuitable to the time of planting or the district, the crop is likely to vary considerably in type, season of maturing and uniformity. Our advice is to grow those varieties your neighbours have proved to do well, and then make your own experiments in a small way as to the suitability of later introductions and improved sorts.

Attention is directed to the Conditions of Sale and Non-Warranty set out on inside front cover of this booklet and on all invoices.

BEANS

For the warmer districts round Sydney and on the North Coast, beans are the prevailing market crop, and in those districts where early crops are possible very handsome returns are being obtained. The same remarks as to the desirability of growing this crop apply as they do to Peas. As to varieties, Canadian Wonder is the standard sort, but there are inferior strains offering. **Yates' Selected Canadian Wonder** are the prime samples offering of a heavy cropping type. A new variety which is quickly becoming known and sought after is **Feltham Prolific**, which is very early and an exceedingly heavy cropper. There is a growing demand for climbing beans amongst market growers; the best variety of this type is **Yates' Epicure**. Usually two bushels per acre is a good sowing, and we advise sowing in drills far enough apart to permit of frequent horse cultivation in the early stages of the crop. Prices on application.

PEAS

In the Highland districts around Sydney and on the Tablelands, many farmers now devote a portion of their holding to the growing of green peas for the Sydney market, and in recent years this has proved very profitable. The growing of peas or beans for the vegetable market is excellent practice from a rotation point of view; it rests the land from ordinary farm crops, gives it the advantage of a leguminous crop, and leaves it in an improved condition for succeeding crops. A fair quality of land and a reasonable use of suitable manure are advisable for the best results. The most favoured varieties for market gardeners are:—**Greenfeast**, **English Wonder**, **Yates' Utility**, **Yates' Earlicrop**, and **Yates' Prelude**, and we shall be pleased to quote on application. Usually 2 bushels per acre is a good sowing, and we advise sowing in drills far enough apart to permit of frequent horse cultivation in the early stages of the crop.

CAULIFLOWERS

These are somewhat uncertain, but where success is attained the profits are usually exceedingly satisfactory. The main thing is to grow them in good rich soil and rush them on quickly.

In dry weather they should be well watered, especially just after planting out.

Plant in December, January or February—this will generally give the best results.

Sow $\frac{1}{2}$ lb. of seed for every acre of plants required. Varieties suitable include our two Specialities:—**Yates' Phenomenal Early**, **Yates' Phenomenal Maincrop**, and **Yates' Metropole**, which have become the standard sorts on the Sydney Market; **Early Italian Giant**, which is a self-protecting variety maturing in about five months.

TOMATOES

Tomatoes are now grown very extensively and are yielding very good returns to those marketing clean, sound, well-graded fruit.

For instructions and general information regarding Tomato culture for market, we would refer readers to our Tomato booklet (post free on application). We are offering varieties claimed to have more or less resistance to the wilt disease, and we believe that it is through this quality of "resistance" when more fully developed that the wilt disease will be overcome. In the meantime we suggest these varieties be tried out under growers' local conditions, and that the market crops, especially the early planted areas, be sprayed every fortnight with Lime Sulphur or Bordeaux Mixture.

The useful varieties for market are **Yates' Earliwinner**, **Chalk's Early Jewel**, **Bonny Best**, **Marglobe**, **Burwood Prize**, and **Yates' Improved Stone**.

The different varieties only show their true character under favourable conditions; two ounces should raise sufficient plants for one acre. See Yates' Annual for descriptions.

ARTHUR YATES AND CO., LTD.,

MARKET GARDEN CROPS (Continued)

CABBAGES

Cabbages do best on rich deeply worked soil, and are largely grown on the cooler upland country near Sydney. The main planting should be made in December, January and February in most districts. Raise the plants in seed beds, transplanting out in rows when large enough to handle, 24 to 30 inches apart each way. About $\frac{1}{2}$ -lb. of seed is required to raise plants for one acre. The two leading sorts are:

YATES' DERWENT RE-SELECTED EARLY DRUMHEAD.—One of the finest market cabbages grown. There is no better variety for standing the hot summers. The heads are large and solid, and in good seasons it matures in four months. We offer Yates' Specially Selected Strain, grown on our own Seed Farm. This strain has given every satisfaction. We also stock European-grown seed.

SUCCESSION.—This and Yates' Early Drumhead are the two main cabbages used by market growers throughout Australia. It is a week or two earlier than Drumhead, otherwise very similar. A good carrier and the best and longest standing cabbage for autumn planting for spring use. Our stock is supplied by Peter Henderson, the originator, and has proved an outstanding one in our trials. We can also supply good European seed.

Other sorts likely to be of interest and worth trying in certain districts are:—Yates' Vanguard, Yates' Utility, Burpee's Allhead, which are all of the early solid, round head type; and Yates' First Early Improved, which has a large conical heart, is very hardy, and is the earliest of all cabbages.

MELONS

There is always a demand for well grown fruit, and this applies particularly to the Rock Melon, which is such a favourite. Both Water Melons and Rock Melons can only be sown in the Spring when the ground is warm. Light rich well manured soil and plenty of warmth and moisture will produce splendid crops. The Rock Melons particularly in favour for market growing are Rocky Ford, Early Hackensack, Irondequoit, and Greely Wonder, while in Water Melons growers usually ask for Yates' Market Wonder, Kleckley's Sweets, and Sugar Stick.

CUCUMBERS

Cucumbers are a paying proposition to many small farmers in moist, mild districts. The seed must be sown in the Spring, when all danger of frost is over, in hills about four feet apart each way. The soil must be in good condition and be liberally manured, and to produce fruit of true character the plants must not be checked in any way. About $\frac{1}{2}$ -lb. of seed is sufficient per acre.

For a long cucumber to be shipped in cases, the most suitable sorts are Improved White Spine and Early Fortune, but two varieties of quite different type are coming into favour on the markets, namely Apple-shaped and Yates' Crystal Apple, which are small round cucumbers of exceptional eating qualities.

For Descriptions, see Yates' Annual Catalogue. For Prices, see Yates' Current Price List. } All Post Free
For Information on Growing.—We have a series of booklets and Leaflets covering most } on request.
of the above crops.

PUMPKINS

The attention of those interested in this crop is also directed to the following paragraph on Squashes.

We have given special attention during the last two or three years to careful Trial Ground Tests of the various strains of Pumpkins. For a long time the ordinary commercial stocks of Pumpkin seed have not been altogether satisfactory, and we therefore set out, by selecting and re-selecting the better strains and eliminating the poorer type, to make up a list of only first-grade reliable sorts. Information gained from our trials showed that some of the older types have been entirely superseded, and also that the higher costs necessary in the production of the improved strains are more than justified.

We consider that the three finest types in cultivation are Yates' Queensland Blue, a pumpkin of exceptionally fine quality and flavour, dark skin and beautiful golden flesh; Yates' Triamble, the well-known distinctive three-cornered variety, and Yates' Select Crown (Sydney Type), a re-selection from the old Crown strain, and superior to it in quality and productiveness. Sow at the rate of 2 lb. per acre, during late spring, in hills, and about 8 feet apart each way.

HUBBARD SQUASHES

It is our opinion that the Hubbard varieties of Squash would be even more extensively grown if those who do not know them would but try them. They are classified as winter varieties, this means that they are later than the summer varieties in maturing, and keep excellently when properly stored. In this respect they are like the better class pumpkin. The fruits mature in about four months from planting the seed, and the yields are very satisfactory. The flavour of these Squashes is all that can be desired, the flesh being dry, mealy, sweet, and altogether delectable. They store at least as well as pumpkins. We have the Green, Golden and Warded varieties. For detailed descriptions, see Yates' Annual.

TURNIPS

See paragraph on Swede Turnips on page 29

Garden Turnips are also a profitable crop for nearby markets. They must be harvested as soon as ready, and will not store. White Stone, Purple Top Munich, and Nepal are the varieties mostly used.

ONIONS

Onions can be made a very profitable crop given good cultivation and suitable conditions. Generally speaking, they may be grown anywhere potatoes are successfully grown, with the exception of some of the cold highland districts. For detail information on the culture of Onions we refer those interested to our booklet, "How to Grow Onions," sent free on request.

The varieties mostly used for market are Yates' Hunter River Early (Brown Spanish), Yates' Select Derwent Long Keeping Brown Spanish, Early Barletta, and Silver King.

SUPPLIERS OF RE-MACHINED AND TESTED FARM SEEDS

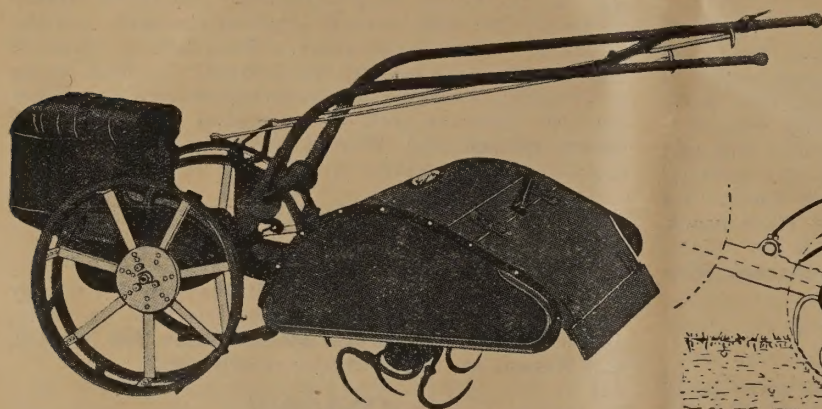
MANURES AND FERTILISERS

SPECIAL NOTE TO CUSTOMERS SERVED BY RAIL (Not Coastal Steamer).—If ordering the minimum quantity of those manures for which we give a special quotation "on rails at manure works," please indicate when writing whether you wish the fertilizer consigned from works separately from seeds or other goods, or whether you wish it consigned by us from Darling Harbour along with any other goods ordered from us at the same time. In the latter case the cost is higher, but for ease of carting or for other reasons it may suit you to pay extra price and have total order delivered in one consignment. If no indication is given we will consign direct from manure works.

BAG LOTS.—It is more economical to order bag lots rather than cwt. lots as this saves breaking the bags. Bags weigh approximately 1½ cwt. in most cases, but vary according to kind ordered. The actual weight sent is charged for at the price per cwt. quoted.

All prices are F.O.R. Sydney except where specially quoted F.O.R. Manure Works. All Freights are Charged Extra

Name or Number of Manure	Class of Crops for which Fertilizer is suitable under average conditions.	No. of Bags per ton	Minimum quantity supplied at ton rates	Per ton F.O.R. Manure Works Freight extra	Per ton F.O.R. Darling Harbour	Bag Lots per cwt.	56 Lbs. and over per cwt.	28 Lb. Lots.	14 Lb. Lots	7 Lb. Lots
22½ SUPERPHOSPHATE	Pastures, Wheat and other cereals and general use	12	4 bags	£5/2/6	£6/10/-	8/-	9/-	2/6	1/6	1/-
YATES' BLOOD AND BONE..	General garden and market garden crops	16	16 bags	10/10/-	11/-/-	11/6	12/-	3/6	2/-	1/3
(Special quotes truck lots, minimum 8 tons)										
YATES' BONEDUST	General garden and market garden crops	12	12 bags	10/10/-	11/-/-	11/6	12/-	3/6	2/-	1/3
(Special quotes truck lots, minimum 8 tons)										
YATES' PLANT FOOD	General garden use, pot plants, etc.	12	6 bags	—	12/10/-	14/-	15/-	4/3	2/6	1/6
HYDRATE OF LIME	General garden use, and for sweetening land for leguminous crops, also for breaking down clay land	20	10 bags	—	12/-/-	12/6	14/-	4/-	2/6	1/6
No. 2 MIXED FERTILIZER	Hay crops, rape, turnips and maize	12	4 bags	7/7/6	8/15/-	10/3	11/-	3/-	1/9	1/-
No. 3 " "	Cabbages, cauliflowers, etc., and for maize on poor soils	14	4 bags	9/5/-	10/12/6	12/3	13/-	3/6	2/-	1/3
No. 5 " "	Tomatoes, potatoes, apples, pears, and grapes, passion fruit and general garden use	12	4 bags	9/12/6	11/-/-	12/6	13/3	3/9	2/3	1/6
No. 6 " "	Onions, tobacco, stone fruits and strawberries	12	4 bags	8/12/6	10/-/-	11/6	12/3	3/6	2/-	1/3
No. 7 " "	Citrus fruits and maize for grain	12	4 bags	10/15/-	12/2/6	13/9	14/6	4/-	2/6	1/6
No. 8 " "	Melons, pumpkins and vining plants, green fodder plants, other than legumes	12	4 bags	8/12/6	10/-/-	11/6	12/3	3/6	2/-	1/3
No. 11 " "	Lucerne, peas, beans and green manuring plants, especially legumes	12	4 bags	6/17/6	8/5/-	9/9	10/6	3/-	1/9	1/-
SULPHATE OF AMMONIA	For mixing or for special purposes like the top dressing of lawns where a highly nitrogenous manure is required	14	—	—	—	20/-	21/-	5/9	3/3	2/-
SULPHATE OF POTASH	For mixing or for special crops like roses, tomatoes, potatoes and fruit trees, which require additional potash	12	—	—	—	20/-	21/-	5/9	3/3	2/-
NITRATE OF SODA	For mixing or where special nitrogenous manures are required	12	—	—	—	20/-	21/-	5/9	3/3	2/-
FLORAPHOS, 2lb. cartons, 2/-	An excellent general purpose manure for the home garden, also convenient for using in solution as liquid manure	14	—	—	—	75/-	76/-	19/6	10/3	5/3



THE ROTOTILLER

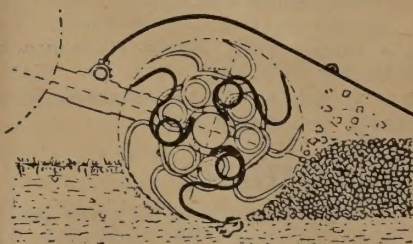
For Market Gardeners, Orchardists and Farmers

Complete Cultivation in one Operation from Fallow Land to Seed Bed

5 H.P. Model. Cut 22ins. to a depth of 10 ins.
10 H.P. Model—Cut 36ins. to a depth of 10ins.

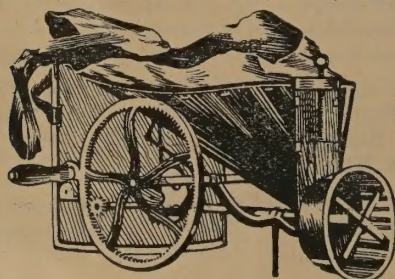
We have used this machine with conspicuous success on our own Seed Farms and Trial Grounds, and will be pleased to have further information sent to anyone interested.

Diagram shows Rototiller principle



THE "CAHOON" SEED SOWER

For sowing broadcast Lucerne, Clovers, Sudan Grass, Millets, Pasture Grasses, etc., and small areas of Seed Grain, these machines are excellent. We use them on our own farms for sowing Lucerne, Clovers, etc., and we find them of considerable value. A strong well-made machine capable of giving long and satisfactory service. Price, 28/-. Postage: N.S.W., 3/3. Other States, 6/-.



HOW TO OPERATE THE "CAHOON."

Test with your normal step turning the crank once for each step; note how far the seed is thrown each side of you and step in from the edge of the area you are sowing sufficient distance so that the throw on that side will just seed to the edge of the land. Step twice this distance on the other side and mark with a peg, then proceed down the line you first determined and return down the line denoted by the peg. This will give an even sowing. Then keep stepping twice the width of one side throw for determining each new line of travel, moving the pegs for guidance until the area is completed. To gauge quantities per acre needs a little care, but if you examine the sown ground for thickness and thinness of seeding, you will soon be able to adjust correctly.

ARTHUR YATES & CO., LTD.

SEED GROWERS, SEED MERCHANTS AND NURSERYMEN.

ADDRESS
LETTERS BOX 2707C G.P.O., SYDNEY

184-186 SUSSEX STREET

SYDNEY, N.S.W.

PHONES: M2161 (FOUR LINES)

TELEGRAMS AND CABLES
"SEEDSMAN, SYDNEY."

AUSTRALIA.

REPRESENTED IN
NEW ZEALAND BY
ARTHUR YATES & CO., LTD.
AUCKLAND

CODES
A.B.C. 5TH EDITION
A.B.C. 6TH ED. (FIVE LETTER)
ASSOCIATED SEED FARMS AND
TRIAL GROUNDS IN N.S.W.
TAS., N.Z. AND ENGLAND

No. 323 R, issued on
Feb. 26th, 1930

AND IN ENGLAND BY
SAMUEL YATES
75 SHUDEHILL
MANCHESTER
"ESTABLISHED 1826"
CIRCULAR

Conditions of Sale and Non-Warranty.—We believe that all Seeds Bulbs and Roots sold by us are of the description and kind specified by us at the time of sale but owing to the practical impossibility in many cases of being certain of this we give no undertaking that such Seeds Bulbs or Roots will correspond with the description under which they are sold and we make all sales subject to this condition. We further give no warranty expressed or implied as to their growth description quality or productiveness and will not be in any way responsible for the crop. If the purchaser does not accept the goods sold to him on these terms they are at once to be returned to us and any money paid to us will be refunded.

ARTHUR YATES & CO., LTD.

DEAR SIR,

AUTUMN SOWING SEASON 1930.

The great interest manifested in pasture improvement the last year or two is already leading to keen enquiry for the particular varieties that have proved so valuable for the coast lands, tablelands and slopes of New South Wales and similar districts in other States; we refer more particularly to Wimmera Rye Grass, Old Pasture Perennial Rye Grass, Cocksfoot, Phalaris Bulbosa, Tall Oat Grass, Subterranean Clover, White and Perennial Red Clover, Cow Grass, and English Trefoil or Black Medic.

This price list is being posted with the first copies of Yates' Autumn Farm Seed Catalogue, which is, this year, a special Pasture Improvement issue, containing much interesting information. This catalogue will be posted to all regular customers on our books. Those who obtain their requirements of Yates' Re-machined and Tested Farm Seeds through the Country Stores, and all others interested, are invited to write for a copy.

The attention of Market Gardeners is again drawn to the fact that this list contains prices of all varieties now being sown.

PRICES.—All quotations (by letter or printed list) are subject to being unsold and to prompt reply, otherwise to market fluctuation. These Current Price Lists are issued at short intervals throughout the year, therefore if not ordering at once please write for the current issue when again on the market.

TERMS.—Our terms for all Agricultural Seeds are strictly nett cash, and orders should be accompanied by remittance for the approximate amount of the order (including freight if the goods are required by coastal steamer or passenger train, or if to be consigned to unattended platforms). When buyers have established an approved account with us, or if satisfactory Sydney business references are given, our terms are nett cash in 30 days from invoice. When remitting, please add exchange to country cheques.

FORWARDING.—Orders sent by goods train are consigned carriage forward (except to unattended platforms) unless we are otherwise instructed at time of order. We deliver seeds on rail or wharf, Sydney, after which goods are on customer's account, and at his risk.

We trust this list will be of interest and that we shall have the pleasure of supplying your requirements.

ARTHUR YATES & CO., LTD.

APPROXIMATE QUANTITIES TO SOW PER ACRE and Weight in lbs. of varieties quoted by the Bushel

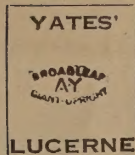
GRASSES		Sow per acre if used alone		Sow per acre if used alone		Sow per acre if used alone	
The various grasses are usually sown not alone, but in combination with other grasses and clovers. The sowings per acre of mixed grasses or mixed grasses and clovers vary according to climate, soil and varieties sown, but the following approximate figures will assist you:—		GRASSES (Cont.)		OTHER FODDER CROPS (Cont.)		OTHER FODDER CROPS (Cont.)	
Rich coastal soil	15-20 lbs.	Rye Grass, Perennial, 20-lb. bus.	20-30 lbs.	Grain Sorghum	4-6 lbs.	Sheep's Burnet	10-12 lbs.
Poor coastal soil	8-12 lbs.	Rye Grass, Wimmera, 20-lb. bus.	6-15 lbs.	Horse or Tick Beans, 60-lb. bushel	2 bus.	Silver Beet	4 lbs.
Tableland rich soil	10-15 lbs.	Tall Oat Grass	20-30 lbs.	Linseed	60 lbs.	Sorghums, broadcast	20-30 lbs.
light country	8-10 lbs.	CLOVERS		Lucerne, moist localities, broadcast	12-15 lbs.	" in drills	10 lbs.
Inland	6-8 lbs.	With the exception of Perennial Red Clover in cold districts, Clovers are usually sown in combination with grasses.		Lucerne, moist localities, drilled	8-12 lbs.	Sowing Rape	3-6 lbs.
Sow per acre if used alone		Subterranean Clover		Lucerne, dry districts	4-8 lbs.	Soy Beans, drilled	15 lbs.
Awnless Brome Grass	20-30 lbs.	Strawberry Clover	from 1 lb.	Lupins, 60-lb. bus.	2 bus.	60-lb. bushel, broadcast	1 bus.
Cocksfoot, 20 lb. bushel ..	1½ bus.	Other Clovers	6-10 lbs.	Mangolds	5 lbs.	Sudan Grass	8-12 lbs.
Couch Grass	10 lbs.	Clovers sown with Grasses ..	2-3 lbs.	Market Beans, 60-lb. bus. ..	2 bus.	Sugar Beet	8 lbs.
Danthonia	15 lbs.	OTHER FODDER CROPS		Maize, in rows for grain ..	8-12 lbs.	Sunflower, in rows	12 lbs.
Kikuyu Grass	2500 roots	Artichokes	4-6 cwt.	Maize, 56-lb. bus., broadcast ..	1-1½ bus.	Tares or Vetches, 60-lb. bushel	1-2 bus.
Mitchell Grass	2-3 lbs.	Barley, 50-lb. bus.	2 bus.	Miller, broadcast	20 lbs.	Swede Turnips	2-3 lbs.
Paspalum compressum	5 lbs.	Buckwheat, 50-lb. bushel, broadcast	1 bus.	" in drills	10 lbs.	Velvet Beans, in wide drills ..	25 lbs.
Paspalum dilatatum	10 lbs.	Buckwheat, in drills	25 lbs.	Mustard	8 lbs.	MARKET GARDEN CROPS	
Phalaris Bulbosa	6-8 lbs.	Canary Seed	17-20 lbs.	Peanuts, nuts	30-40 lbs.	Garden Beans, 60-lb. bus. ..	2 bus.
Prairie Grass, 20-lb. us. ..	1-2 bus.	Cattle Melon	2 lbs.	" shelled seed	10 lbs.	Cabbage	½ lb.
Rhodes Grass	4-6 lbs.	Cattle Pumpkin	1-2 lbs.	Peas, Field, 60-lb. bus. ..	2 bus.	Cauliflower	½ lb.
Rye Grass, Italian	20-30 lbs.	Cow Peas, drilled	10 lbs.	Seed Oats, 40-lb. bus. ..	2 bus.	Cucumber	½ lb.
		60-lb. bus. broadcast	½-1 bus.	Seed Wheat, 60-lb. bus. in drills for grain	1-1 bus.	Melon, Water	2 lb.
		Field Carrot	3 lbs.	Seed Wheat, broadcast	1-2 bus.	" Rock	½ lb.
						Onion	3 lbs.
						Peas, 60-lb. bus.	2 bus.
						Pumpkin	2 lb.
						Tomatoes	2 oz.
						Turnip	2 to 3 lb.

THIS PRICE LIST CANCELS ALL PREVIOUS ISSUES

CURRENT PRICE LIST OF

LUCERNE

YATES' A.Y. BROADLEAF GIANT UPRIGHT.—This is the proved best strain for all purposes and Australian conditions. For full information, see Yates' Lucerne Booklet. Supplied only in sealed and branded bags.



	25 lbs., 2/7 lb.; 50 lbs., 2/6 lb.
Small lots under 25 lbs.	2/8 lb.
25 lbs. and over	2/7 lb.
50 lbs. and over	2/6 lb.
5 cwt. and over	2/5½ lb.
10 cwt. and over	2/5 lb.

GRASS SEEDS

IMPORTANT PASTURE VARIETIES For AUTUMN and WINTER SOWING.

	Per lb.	100lb. Lots Per lb.	500lb. Lots Per lb.
Rye Grass—			
„ Perennial, A.Y. Old Pasture (extra heavy)	-/7	6½d. lb.	6½d. lb.
„ Perennial, Re-machined (good ordinary)	Sold Out	6½d.	5¾d. lb.
„ Italian	6½d.	5¾d. lb.	5½d. lb.
„ Westerwoldicum (see Italian)			
„ Wimmera (from selected pastures)	-/11	-/9½ lb.	-/9 lb.
Cocksfoot (extra heavy seed)	1/3	1/1 lb.	1/- lb.
Phalaris bulbosa (from pastures showing true perennial type), supplies very limited	7/6	—	—
„ 14 lbs. and over			
„ 50 lbs. and over			
„ 100lbs. and over			
Prairie	-/9	-/8 lb.	-/7½ lb.
Tall Oat Grass (Avena elatior)	1/7	1/5 lb.	1/4 lb.
Danthonia (Wallaby Grass)	1/6	1/3 lb.	—
Fescue—			
„ Tall	2/1	1/11 lb.	1/9 lb.
„ Chewings	1/6	1/3 lb.	1/2 lb.
„ Meadow	1/7	1/5 lb.	—
„ Rubra stolonifera (Creeping Red Fescue)	3/10 lb.		
„ Fine Leaved (ovina)	1/9		

IMPORTANT PASTURE VARIETIES for SPRING, SUMMER and EARLY AUTUMN PLANTING.

Rhodes	1/5	1/4 lb.	1/3 lb.
Paspalum			
„ Dilatatum (Prime hand-shaken)	1/8	1/6 lb.	1/5 lb.
„ Compressum	-/11	-/9 lb.	-/8 lb.
Couch (cynodon dactylon) (choice local saved)	2/1	1/11 lb.	1/9 lb.
Teff Grass	-/10	—	—

Johnson Grass not stocked and not recommended

Buffel Grass (Pennisetum cenchroides) ¼ lb. 2/6; 10/- lb.]

GRASSES SUPPLIED BY ROOTS ONLY.

	Per 100	Per 1000
Kikuyu	7/6	52/6
Elephant Grass	10/-	75/-
Poa Aquatica (Water Meadow Grass), per doz.	1/9; per sack, 35/-; ½ sack, 18/6	
Poa Fluitans, per sack, 40/-; half sack, 22/6		
Paspalum Distichum, per sack, 35/-; half sack, 18/6		

We can give special quotations for Victorian orders.

NATIVE VARIETIES

(Supplies Very Irregular)	Per Lb.
Mitchell (Astrebla)	
Australian Blue (Andropogon)	

SUNDRY GRASSES AND SPECIAL LAWN MIXTURES.

Poa	Per Lb.	28 lbs. Per Lb.	100 lbs. Per Lb.
„ pratensis (Kentucky Blue Grass)	1/11	1/10	1/9
„ compressa (Canadian Blue Grass)			
„ trivialis (Rough-stalked Meadow Grass)	2/9		
„ nemoralis (Wood Meadow Grass)	3/-		
Agrostis (The Bent Grasses)			
„ tenuis canina (Brown Top or Rhode Island Bent) (specially cleaned for lawns)	2/6	2/4	2/3
„ vulgaris (Red Top)	1/9	1/7	—

SUNDRY GRASSES AND SPECIAL LAWN MIXTURES—Continued.

	Per lb.	28 lbs. Per Lb.	100 lbs. Per Lb.
Crested Dogstail	1/7		
Timothy	-/11		
Yorkshire Fog	-/11		
No. 1 Mixture, "Yates' Evergreen," for lawns. The finest dwarfest and most permanent grass mixture offered	3/-	2/11	2/9
No. 2 Mixture, for tennis courts	3/6	3/3	3/2
No. 3 Mixture, for putting greens	3/9	3/6	3/3
No. 4 Mixture, for fairways	2/-	1/11	1/9
No. 5 Mixture, for bowling greens and croquet lawns	4/-	3/9	3/8
No. 6 Mixture, for lawns, a cheaper mixture of hardy and quick growing grasses	1/9	1/8	1/6
Lawn Couch, supergrade	2/5	2/3	2/2
Couch Grass Roots, per sugar bag, 5/-; per sack, 12/6			
Buffalo, roots only, per 100	2/6; per 1000	17/6	
Kikuyu (sometimes used for lawns), see Pasture Grasses section.			

WHEN ORDERING LAWN MIXTURE, GIVE PARTICULARS OF SOIL, LOCATION AND WATER SUPPLY.

CLOVER SEEDS

	Per Lb.	28 lbs. Per Lb.	100 lbs. Per Lb.	500 lbs. Per Lb.
Subterranean—No. 1 Supergrade	2/3	2/2	2/1	2/-
1000 lbs. 1/11 lb.				
White (Superfine Grade)	1/6	1/5	1/4	1/3
Perennial or Red Cow Grass	1/2	1/1	1/-	-/11½
Alyske	1/7	1/6	1/4	
Strawberry (shelled seed)	7/-	6/9	6/6	
Lotus				
„ major	3/10	3/7		
„ corniculatus	2/4	2/2		
„ angustissimus	2/2	2/-		
Medicago				
„ lupulina (English Yellow Trefoil or Black Medic)	1/-	-/11	-/9	
„ orbicularis (Burrless Clover)	2/3			
„ denticulata (Burr or Native Trefoil) (shelled seed)	1/1	1/-	-/10	
Berseem (Egyptian Clover)	1/2	1/1	1/-	-/11½
Incarnatum (Crimson Clover)	1/1	1/-	-/10	
Bokhara (White Sweet Clover)	1/2	1/1	1/-	-/10
Cluster Clover (Trifolium glomeratum) (Selected Seed)	2/3	2/1		
Trifolium cernuum (Gin Gin Clover)	10/-			

SUNDRY PASTURE PLANTS

	Per Lb.	28 lbs. Per Lb.	100 lbs. Per Lb.
Sheep's Burnet (contains a small percentage of Sainfoin)	1/4	1/3	1/1
Rib Grass	-/9	-/7	-/6
Salt Bush, Old Man (Nummularia)			
Salt Bush, Creeping (Semibaccata)			

SEED BARLEY

	Per Bus.	25 Bus. Per Bus.	100 lbs. Per Bus.
Skinless	8/2	7/11	—
Trabut			
Pryor			
Cape	6/-	5/9	5/7
English	7/1		

The Prices quoted herein are those ruling at the date on the front page hereof. Quotations subject to Sales and Prompt Reply.

This Price List is published at short intervals, and there is always one current; write us for it when interested.

Lines not priced are not at present in stock, but supplies may be available a little later—watch following issues.

ARTHUR YATES & Co. Ltd.

AUSTRALIA'S GREATEST SEED HOUSE
Warehouse: 184-6 SUSSEX STREET
Box 2707-c Sydney. Wires: "Seedsman"

YATES' RE-MACHINED AND ³

MILLET

	Per Lb.	56lbs. & over Per Cwt.	5 cwt. lots per cwt.	10 cwt. & over Per Cwt.
Japanese	-3½	21/-	20/6	20/-
Hungarian	-4½	29/6	28/-	—
White French	-4	24/-	22/6	21/6
Pearl	1/9	—	—	—
Broom (Local grown Long Hurl)	-5	32/6	—	—

SUDAN GRASS

Locally grown seed, re-machined in our own cleaning plant and passed by the Department of Agriculture as free from all injurious Sorghum Hybrids.

NO SUPPLIES UNTIL SPRING

SEED MAIZE

	1/4 Bus.	Bus.	10 Bus. per bus.
Early Morn	—	—	—
Golden Glow, 90 Day Flint	—	—	—
Small Leaming	—	—	—
Yellow Dent Maize (for Green Feed only)	—	—	—
Silvermine (see note below re samples)	—	—	—
Funk's Early Yellow Dent, Small Red Hogan	—	—	—
Wellington (or Early Yellow Dent)	—	—	—
Fitzroy (or Improved Yellow Dent)	—	—	—
Hickory King—	—	—	—
Selected Grain Sample	—	—	—
Green Feed Sample	—	—	—
Giant White	—	—	—
Goldmine	—	—	—
Manning White	—	—	—
Large Red Hogan	—	—	—
Yellow Hogan	—	—	—
Yellow Hawkesbury	—	—	—
Yellow Moruya	—	—	—

NOTE.—Of some of the varieties listed, the samples available this season are inclined to vary a little from type, but each line has been carefully selected from the best offering and then heavily re-machined.

SORGHUM

	Per Lb.	56 lbs. and over Per Cwt.	10 cwt. and over Per Cwt.
SWEET VARIETIES.			
No. 34 (no supplies)	—	—	—
Early Amber Cane	—	—	—
Sumac	—	—	—
Planters' Friend	—	—	—
Sacaline	—	—	—
Collier	—	—	—
Honey	—	—	—
No. 61 (now called "Cowper")	—	—	—
White African	—	—	—
Saccharatum or Black Sorghum (reliable supplies not offering)	—	—	—
Feterita Grain Sorghum	—	—	—

SEED OATS

	Per Bus.	25 bus. Per Bus.	100 bus. Per Bus.
Algerian, A.Y. Extra Prime	6/6	6/4	6/3
" No. 2 Regraded	5/6	5/4	5/3
Sunrise (rust resistant, moderate stooling)	7/7	7/4	—
Supplies Limited	7/-	6/10	6/9
Mulga (early, grazes well)	—	—	—
Myall (superseded by Mulga)	—	—	—
Budda (very early, rust resistant)	—	—	—
Guyra (for cool districts)	—	—	—
Ruakura	—	—	—
White Tartarian	7/3	7/-	—
Black Tartarian	7/3	7/-	—
Heavy White	—	—	—
Heavy Black	—	—	—
Dun	8/8	—	—

SEED WHEAT

	Bus.	25 Bus. Per Bus.	100 Bus. Per Bus.
Florence (excellent for grazing on coast, and for grain in very early districts; a hard wheat)	8/10	8/8	8/7
Thew (a hard wheat, also excellent for grazing on coast)	—	—	—
Canberra	8/8	8/5	—
Hard Federation	—	—	—
Waratah	8/8	8/5	—
Soft Federation	—	—	—
Marshall's No. 3 (a purple straw variety)	—	—	—
Yandilla King	8/8	8/5	—
Bena	8/8	8/5	—

RYE CORN

Mammoth White	9/11	9/8	—
Black Winter	9/11	9/8	9/6

SOWING RAPE

	Per Lb.	56 lbs. and over Per Cwt.	10 cwt. Per Cwt.
A.Y. Dwarf Broadleaf Essex	-8	60/-	58/6

FIELD PEA AND BEAN CROPS

	Per Lb.	Per Bus. (60 lbs.)	10 Bus. Per Bus.	100 Bus. Per Bus.
Field Peas (all re-machined samples)	—	—	—	—
" Grey or Partridge	-3	10/9	10/6	10/3
" Black Eye Susan	-3	12/6	12/3	—
" Blue	-3	10/9	10/6	10/3
" Dun	-3	10/-	9/9	9/7
Cow Peas	—	—	—	—
" Black Seeded	—	—	—	—
" Clay Coloured	—	—	—	—
Soy Beans, Wilson's Early Black, Mammoth Yellow, Biloxi, Laredo	-11	—	—	—
Velvet Bean, 90 Day Speckled, Osceola	—	—	—	—
Horse or Tick Beans	-3	11/3	11/-	10/9
Mauritius Beans, 1/4 bus. 10/3	-11	—	—	—

TARES OR VETCHES

TWO NEW VARIETIES.

We have pleasure in offering the two following new varieties, and as Golden Tares are not at present obtainable, we suggest that small lots of these sorts be put in for trial. The seeds are small and only half the usual sowings per acre is necessary.

Woolly Podded Vetch (*Vicia dasycarpa*).

Purple Vetch (*Vicia atropurpurea*).

Per lb., 1/-; 28 lbs. and over, 10d. per lb.

	Per Lb.	Per Bus. (60 lbs.)	10 Bus. Per Bus.
Golden supplies expected in March	—	—	—
Grey or Black	—	—	—

MANGOLDS AND SUGAR BEET

	Per Lb.	28 lbs. and over Per Lb.	56 lbs. and over Per Cwt.
Mangold, Yates' Mammoth Long Red, Yates' Champion Yellow Globe, Long Yellow, Giant Half Sugar White, Giant Half Sugar Rose	1/9	1/8	165/-
Sugar Beet, Wanzleben	2/-	1/9	170/-

SUNDRY VEGETABLE ROOTS AND BULBS

RHUBARB—Roots available during winter season.

Victoria Giant .. small,	
" " larger,	
Topps Winter .. small,	
" " larger,	
Sydney Crimson, small,	
" " larger,	
Cherry Red	

SOLD OUT

JERUSALEM ARTICHOKE—SOLD OUT

SHALLOTS, TREE AND POTATO ONIONS, Etc.

Small French Shallots .. 1/- lb.; 28 lbs and over, 10d. lb.	
Large Russian Shallots .. sold out.	
Potato Onions .. 1/3 lb.; 28 lbs. and over, 1/- lb.	
Tree Onion Tops .. 1/6 lb.	
Garlic—1/- lb.; 28 lbs. and over, 10d. lb.; 56 lbs. and over, 70/- cwt.	

SEED POTATOES—Stocks now sold out

The Cahoon Seed Sower

An Excellent Machine for **Price - - 28/- each**
Broadcasting Fodder Crops Postage extra. N.S.W. 3/-; other States 5/8

TESTED FARM SEEDS

4

SUNDRY FODDER AND GRAZING CROPS

	Per Lb.	28 lbs. Per Lb.	56lb. & over Per Cwt.
Buckwheat, Japanese	-/5	-/4	25/-
Canary Seed (for sowing) ..	-/8	-/6	50/-
" Large Moroccan type (for sowing) ..	-/10	-/9	72/6
Kale, Thousand Headed	2/6	1/9	165/-
" Chou Moellier	3/6		
Kudzu Vine Per Packet, 6d.			
Linseed (Flax)	-/6	-/5	
Lupin, Blue N.Z.	-/7	-/6	45/-
Melons, Mixed Cattle	3/-	2/9	
Mustard, Agricultural	1/-	-/9	62/6
Peanuts			
" Small Red Spanish	1/3	1/2	—
" Small White Spanish	1/3	1/2	—

	Per lb.	28lbs. Per lb.	56lbs & over Per cwt.
Field Pumpkin			
" Gramma or Trombone	10/-		
" Mixed Cattle	4/6		
Sunflower, Black Seeded	1/3	1/-	92/6
" Striped Seeded	1/3	1/-	92/6
Kurrajong (Sterculia diversifolia), per oz., 2/-			
Tagosaste (so-called Tree Lucerne), per 1/4 lb. 1/6	4/6	3/6	—
Medicago Arborea (Yellow Flowered True Tree Lucerne), per oz. 1/-, per 1/4 lb. 2/6	7/6	—	—

SEED POTATOES

YATES' HAND-PICKED SAMPLES.—Write for Special Potato Price List, available July onwards.

PEAS FOR GARDEN AND MARKET

New Zealand Grown— 1 bus.—60 lbs.	Per Lb. in lots of	Per 1/4 bus.	Per Bus. in lots of
Carriage to be paid by purchaser	1 lb. 3 lb. 7 lb. 10 lb.	1/4 bus.	1 bus. 5 bus. 25 bus. 100 bus.
Yates' Earlicrop (Comet) ..	2/- 1/9 1/6 1/3	14/6	52/6 50/- — —
Yates' Prelude	1/9 1/6 1/3 1/-	11/-	40/- 39/- — —
Blue Bantam (to arrive) ..	— — — —	—	— — — —
Yates' Utility	1/9 1/6 1/3 1/-	11/-	40/- — — —
Little Marvel	1/6 1/4 1/2 1/-	11/-	40/- 39/- — —
Witham Wonder	1/- 10d 8d 6d	6/-	22/- 21/6 21/- 20/-
Richard Seddon	1/3 1/- 10d 8d	7/6	27/- 26/6 26/- 25/-
English Wonder	1/3 1/- 10d 8d	7/6	27/- 26/6 26/- 25/-
GREENFEAST	1/- 10d 8d 7d	7/3	26/- 25/- 24/- 23/-
Te-Aroha	1/3 1/2 1/- 10d	9/3	33/- — — —
Sherwood	1/3 1/2 1/- 10d	9/3	33/- 32/- — —
The Daisy	1/3 — — —	—	— — — —
Senator	1/3 1/2 1/- 10d	9/3	33/- — — —
Yorkshire Hero	1/- 10d 8d 6d	6/-	22/- 21/- 20/6 19/6
Stratagem	1/3 1/- 10d 8d	7/6	27/- 26/6 26/- 25/-
English Defiance	1/- 10d 8d 7d	7/6	27/- 26/6 26/- 25/-
Telephone	1/3 1/- 10d 10d	—	— — — —
Day's Early Sunrise	1/3 1/2 1/- 10d	9/3	33/- 32/- — —
Sugar or Edible Podded Dwarf	1/6 — — —	—	— — — —
" " " " Tall	2/6 — — —	—	— — — —

BEANS FOR GARDEN AND MARKET

1 bus.—60 lbs.	Per Lb. in lots of	Per 1/4 bus.	Per Bus. in lots of
Carriage to be paid by purchaser	1 lb. 3 lb. 7 lb. 10 lb.	1/4 bus.	1 bus. 5 bus. 25 bus. 100 bus.
Canadian Wonder, Yates' ..	1/9 1/8 1/6 1/5	18/6	67/- 66/- 65/- 64/-
Selected	2/- 1/11 1/9 1/6	19/3	70/- 67/6 — —
Feltham Prolific	2/- 1/11 1/9 1/6	18/-	— — — —
Emperor William	1/6 1/3 1/- 9d	9/3	33/- — — —
Haricot	2/- 1/11 1/9 1/6	19/3	70/- — — —
Dwarf Stringless, Green Pod..	2/- 1/11 1/9 1/6	16/6	60/- — — —
Perfect Bush (Byer's)	2/- 1/11 1/9 1/6	16/6	60/- 57/6 — —
Startler Wax	2/- 1/11 1/9 1/6	16/6	60/- — — —
Brittle Wax	— — — —	—	— — — —
Black Seeded Wax	— — — —	—	— — — —
Yates' Epicure (Everbearing Stringless)	2/- 1/11 1/9 1/6	18/-	65/- 64/- — —
Kentucky Wonder	2/- 1/11 1/9 1/6	18/9	67/6 66/- 64/- —
General McCay	2/- 1/11 1/10 1/9	19/3	70/- — — —
White Dutch Runner	2/- 1/11 1/9 1/6	18/9	67/6 65/- — —
Scarlet Runner, Improved ..	2/- 1/11 1/9 1/8	17/6	65/- — — —
Tall Lima	2/6 2/5 2/4 2/3	27/6	— — — —
Large Podded Bush Lima ..	2/6 2/5 2/4 2/3	27/6	— — — —
Early Long Pod (Leviathan) ..	1/- 11d 9d 8d	7/6	27/6 26/6 — —
Broad Beans	1/- 11d 9d 8d	7/6	27/6 26/6 — —
Broad Windsor Broad Beans ..	1/- 11d 9d 8d	7/6	27/6 26/6 — —
Yates' Dreadnought Long Pod ..	1/- 11d 9d 8d	9/6	35/- — — —
Broad Beans	1/- 11d 9d 8d	9/6	35/- — — —
Coles' Dwarf Prolific Broad Beans	2/- 1/11 1/9 1/6	19/3	70/- — — —
Snake Bean	6/- 5/9 5/6 —	—	— — — —
Madagascar Bean	— — — —	—	— — — —

BIRD SEEDS AND SUPPLIES

Yates' "Top Note" Mixture, in 2 lb. branded cotton bags, 10d. bag, 9/9 doz. carriage extra.)

Yates' Parrot Food Mixture in 2 lb. branded cotton bags, 8d. bag, 7/9 doz. (carriage extra)

Yates' "Reliable" Plain Canary, in 2 lb. branded cotton bags, 1/- bag, 11/6 doz. (carriage extra)

WE do what is probably the largest Bird Seed business in Sydney, and, having exceptionally complete facilities for buying and re-grading, we submit the following quotations in full confidence that our prices are right and our quality unequalled. The seed is all heavily cleaned and freed from dust and other impurities.

YATES' TOP-NOTE MIXTURE for Canaries, Finches, and other small birds, is made up in scientific proportions, and contains all seed necessary to keep cage birds in robust health. Furthermore, we vary the proportions to suit the requirements of birds at the different seasons of the year.

YATES' PARROT FOOD for Parrots, Cockatoos, Parrakeets, etc., is made up from selected seed and grains, such as Maize, Sunflower, Wheat, Oats, Hemp, Peanuts, etc., and is mixed in the proper proportions to keep this class of birds in perfect health and plumage. This mixture ensures a varied diet such as the birds get in their wild state.

	Per Lb.	Per 7 Lbs.	Per 14 Lbs.	Per 28 Lbs.	56 lbs. and over Per Cwt.	5 cwt. Per Cwt.	10 cwt. Per Cwt.
Yates' "Top Note" Mixture, in bulk ..	-/6	2/9	5/3	9/9	35/-		
Yates' Parrot Food Mixture, in bulk ..	-/4	2/-	3/6	6/-	22/6		
Canary Giant Spanish	-/9	5/-	9/6	18/-	70/-		
" Morocco	-/8	3/6	6/6	12/-	44/6		
Yates' "Reliable" Plain Canary, in bulk	-/6	3/-	5/6	10/-	37/6		
Hemp	-/4	2/-	3/6	6/6	24/-		
Bird Millets, White	-/4	1/9	3/3	5/9	20/6		
" Red	-/4 1/2	2/3	4/-	7/6	29/6		
" Hungarian	-/3 1/2	1/9	3/-	5/6	21/-		
Bird Rape, Large English	-/7	3/9	7/-	13/-	47/6		
" Summer (True Small Seeded) ..	-/9	5/-	9/6	17/6	65/-		
Sunflower, Black	-/7	3/3	6/-	11/3	41/-		
" Grey (Large)	-/7	3/3	6/-	11/3	41/-		
" Striped Imported	-/5	2/3	4/-	7/9	28/6		
Peanuts, Small	-/9	5/-	9/9	18/6	67/6		
Linseed	-/7	3/3	6/-	11/-	39/-		
Bird Lettuce, 3 lbs. for 5/6	2/-						
Maw, 3 lbs. for 4/6	1/9	9/6	18/-				
Gold of Pleasure, 3 lbs. for 5/6 ..	2/-						
Bird Rib	-/6	3/-	5/6	10/-	37/-		
Bird Pumpkin	1/9	10/6	19/6	35/-			
Bird Melon	-/6	3/-	5/6	9/6			
Shell Grit			1/3	1/9	5/-		
" In 3 lb. branded cotton bags, 6d. per bag							

ON APPLICATION

YATES' CURRENT PRICE LIST OF VEGETABLE SEEDS FOR MARKET GARDENERS

DELIVERY—POSTAGE OR CARRIAGE FREE.—Delivery of all Seeds, Plants and Roots sold is made at Post Office, Railway or Wharf, Sydney, but on Bulk Vegetable Seeds (other than Peas or Beans) invoiced at prices quoted herein, we pay all ordinary postal or carriage charges. Customers desiring Bulk Vegetable Seeds to be sent by other than cheapest method should allow sufficient to cover any extra charges entailed.

PRICES.—The prices quoted are those ruling at this date, and while we expect to adhere to them they are subject to change without notice. Reduced rates for large quantities, where available, are shown, and the rate for the largest quantity priced in this list will be charged for any greater quantity unless a special quotation has been obtained by letter.

Conditions of Sale and Non-Warranty.—We believe that all Seeds Bulbs and Roots sold by us are of the description and kind specified by us at the time of sale but owing to the practical impossibility in many cases of being certain of this we give no undertaking that such Seeds Bulbs or Roots will correspond with the description under which they are sold and we make all sales subject to this condition. We further give no warranty expressed or implied as to their growth description quality or productiveness and will not be in any way responsible for the crop. If the purchaser does not accept the goods sold to him on these terms they are at once to be returned to us and any money paid to us will be refunded.

ARTHUR YATES & CO., LTD.

	Oz.	½lb.	lb.	3lb.	7lb.	14lb.
ASPARAGUS—						
Connover's Colossal	1/-	2/6	7/6	—	—	—
Palmetto	1/-	2/6	7/6	—	—	—
BETROOT—						
Yates' Obelisk—28-lbs., 3/6 per lb.; 56-lbs., 3/3 per lb.	1/-	1/9	5/-	4/6	4/3	4/-
Nonpareil—28-lbs., 3/- per lb.; 56-lbs., 2/9 per lb.	1/-	1/6	4/-	3/9	3/6	3/3
Yates' Turnip Rooted (Selected Early Flat Egyptian)—28-lbs., 3/- per lb.; 56-lbs., 2/9 per lb.	1/-	1/6	4/-	3/9	3/6	3/3
Yates' Derwent Globe (Improved Crimson Globe) 28-lbs., 3/6 per lb.; 56-lbs., 3/3 per lb.	1/-	1/9	5/-	4/6	4/3	4/-
Blood-Red—28-lbs., 3/- per lb.; 56-lbs., 2/9 per lb.	1/-	1/6	4/-	3/9	3/6	3/3
Silver or Spinach—Lucullus (crimped foliage) variety or Dark Green Broad-Ribbed variety—28-lbs., 3/- per lb.; 56-lbs., 2/9 lb.	1/-	1/6	4/-	3/9	3/6	3/3
Sugar Beet—See under Farm Seeds inside						
BRUSSELS SPROUTS	1/-	3/-	9/-	—	—	—
CABBAGE—						
Yates' First Early Improved	3/-	10/-	35/-	34/-	32/6	30/-
Yates' Earliball	3/-	10/-	35/-	34/-	—	—
St. John's Day Small Early	1/3	3/6	10/-	9/-	8/9	8/6
Early Jersey Wakefield	2/-	6/6	20/-	—	—	—
Yates' Early Drumhead, Derwent Re-selected	3/-	10/-	35/-	34/-	—	—
Yates' Early Drumhead, European grown	1/3	3/6	10/-	9/-	—	—
Succession, P. Henderson's Own Stock	5/-	15/-	45/-	43/6	—	—
Succession, European grown	1/3	3/6	10/-	9/-	—	—
Early Flat Dutch	1/3	3/6	10/-	9/-	—	—
Yates' Vanguard	3/-	10/-	35/-	34/-	—	—
Yates' Utility	3/-	10/-	35/-	34/-	—	—
Improved St. John's Day	1/3	3/6	10/-	9/-	8/9	8/6
Copenhagen Market	2/-	6/6	20/-	19/-	—	—
Enkhuizen Glory	2/-	6/6	20/-	19/-	—	—
Burpee's Allhead	2/-	6/6	20/-	19/-	18/-	17/6
Burpee's Surehead	2/-	6/6	20/-	19/-	18/-	—
Enfield Market (London Market)	1/3	3/6	10/-	9/-	8/9	8/6
Drumhead Savoy	1/3	3/6	10/-	9/-	8/9	8/6
CAULIFLOWER—						
Yates' Phenomenal Early	5/-	15/-	45/-	42/-	40/-	37/6
Yates' Phenomenal Main Crop	5/-	15/-	45/-	42/-	40/-	37/6
Early Italian Giant	2/-	6/-	17/6	16/-	15/-	14/6
Veitch's Autumn Giant, Yates' Selected	2/-	6/-	17/6	16/-	15/-	14/6
Late Italian Giant	2/-	6/-	17/6	16/-	15/-	14/6
Yates' Metropole	5/-	15/-	45/-	42/-	—	—
Early Green Glazed (or Greenleaf)	10/-	30/-	90/-	—	—	—
CELERY—						
White Plume	1/6	4/6	13/6	12/-	11/-	10/-
Golden Self Blanching,	7/-	20/-	60/-	—	—	—
Solid White	1/3	3/6	10/6	9/6	9/-	8/-
Soup Celery (for flavouring, non-growing) 28lbs., 1/9 per lb.	—	1/-	3/-	2/9	2/6	2/-

Growers of Vegetables for Market are now ordering the following for districts suitable for these crops.

BETROOT—Yates' Turnip Rooted and Yates' Obelisk.

CABBAGE—Peter Henderson's Own Strain of Succession. Yates' Derwent Re-selected Early Drumhead.

CAULIFLOWER—Yates' Phenomenal Main Crop, also Yates' Phenomenal Early.

CARROTS

PARSNIP

ONIONS

LETTUCE

TURNIPS

RADISH

PEAS

SWEDES

TOMATOES

	Oz.	½lb.	lb.	3lb.	7lb.	14lb.
CARROT—						
Early Horn—28-lbs., 3/6 per lb.	1/-	1/9	5/-	4/9	4/6	4/-
Oxheart (Guerande)—28-lbs., 3/6 per lb.;	1/-	1/9	5/-	4/9	4/6	4/-
Chantenay—28-lbs., lb.	1/-	1/9	5/-	4/9	4/6	4/-
Manchester Table—28-lbs., 3/6 per lb.;	1/-	1/9	5/-	4/9	4/6	4/-
Half Long Danvers—28-lb. 3/6	1/-	1/9	5/-	4/9	4/6	4/-
Intermediate (James) Yates' Select—28-lbs., 3/6 per lb.	1/-	1/9	5/-	4/9	4/6	4/-
St. Valery or Long Red Intermediate—28-lbs., 3/6 per lb.	1/-	1/9	5/-	4/9	4/6	4/-
Field Carrots—White Belgian, Orange Giant—28-lbs., 3/6 per lb.	1/-	1/9	5/-	4/9	4/6	4/-
CAPE GOOSEBERRY—						
Common Small Fruited	4/6	13/6	40/-	—	—	—
Golden Nugget	—	—	—	—	—	—
CRESS—Curled						
	—	9d	2/6	—	—	—
CUCUMBER—						
Yates' Crystal Apple	—	—	—	—	—	—
Early Fortune	—	—	—	—	—	—
Yates' Improved White Spine	1/3	3/6	10/-	9/-	8/9	8/6
Long Green Prickly	1/3	3/6	10/-	9/-	8/9	8/6
Short Prickly	1/3	3/6	10/-	9/-	8/9	8/6
Apple Shaped	1/6	4/3	12/6	11/-	10/-	9/6
EGG PLANT —New York Spineless (Purple) 3/- 9/-	3/-	9/-	—	—	—	—

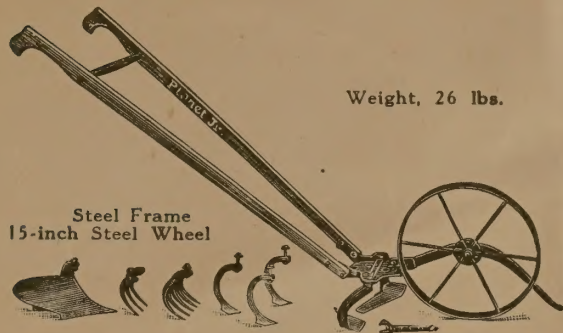
KINDLY NOTE—All Prices subject to change without notice as new supplies of some varieties not yet received

RADISH—

PLANET JR. IMPLEMENTS

FOR THE FARM, ORCHARD AND LARGE GARDEN

The intelligent use of these wonderful labor-saving implements is a big factor in the successful working of market gardens, orchards, etc. Provided reliable seeds only are sown, regular and accurate planting, followed by consistent cultivation, will do more than anything else to ensure big returns. We therefore offer these machines with every confidence. They are the strongest and most useful on the market, and have an excellent reputation for design and durability.



Weight, 26 lbs.

No. 16—SINGLE WHEEL HOE, CULTIVATOR, RAKE AND PLOUGH.

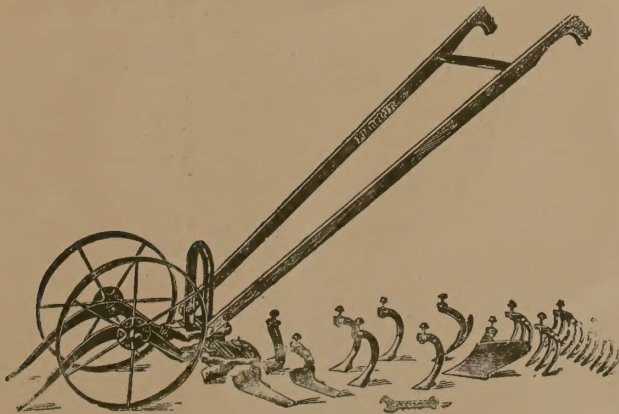
While Single Wheel Hoes do not accomplish as wide a range of work as the Double Wheel Hoes, they are lighter, and for steady all day work in the market garden, many growers prefer them. This machine can be used to hoe both sides of the row at once while the plants are small (special axle bolt and ferrules needed and furnished as extras). As the illustration shows, the equipment includes one pair of 6 in. hoes, three cultivator teeth, one large plough, one 7 in. rake, one 4 in. rake and leaf-guard.

Price, 47/6. Freight extra. Weight packed, about 30lbs.

No. 17.

Identical with No. 16, except that the equipment does not include the two rakes.

Price, 40/-. Freight extra. Weight packed, about 27lbs.



No. 11—COMBINED DOUBLE AND SINGLE WHEEL HOE.

The most completely equipped Wheel Hoe we offer. The height of the machine is adjustable for different work, and can be made to straddle rows 20 ins. high; and the various attachments are easily put on or removed. As the illustration shows, the attachments

include—One pair of large hoes, one pair of small hoes, four cultivator teeth, one pair ploughs, one pair three-tooth rakes, one pair five-tooth rakes, two leaf lifters.

Price, 70/-. Freight extra. Weight packed, about 40lbs.

No. 12.

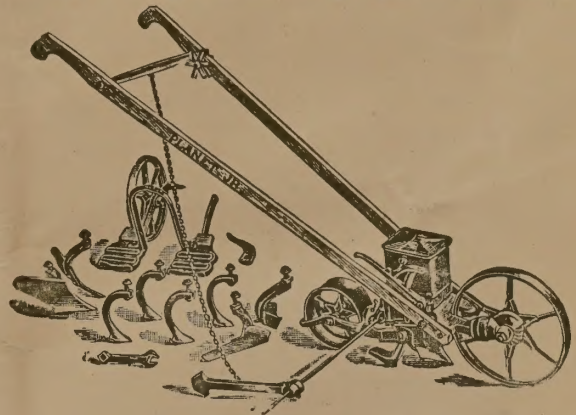
Identical with No. 11, except that the smaller set of hoes and rakes are not included.

Price, 55/-. Freight extra. Weight packed, about 36lbs.

No. 13

Identical with No. 11, except that the equipment is limited to one pair of large hoes.

Price, 42/6. Freight extra. Weight packed, about 30lbs.



No. 25—COMBINED HILL AND DRILL SEEDER, DOUBLE & SINGLE WHEEL HOE, CULTIVATOR AND PLOUGH.

An excellent hand machine for either garden or farm. It will sow almost all varieties of seeds, and is one of the most useful tools one can have. The equipment includes:—One pair 6 in. hoes, four cultivator teeth, one pair of ploughs, two leaf guards and a marker. The hopper holds 2½ quarts.

Price, £5/7/6. Freight extra.

Weight packed, about 61 lbs.

No. 4

Very similar to No. 25, except that it has one less cultivator tooth, only one plough, and one leaf guard.

Price, £4/10/-. Freight extra.

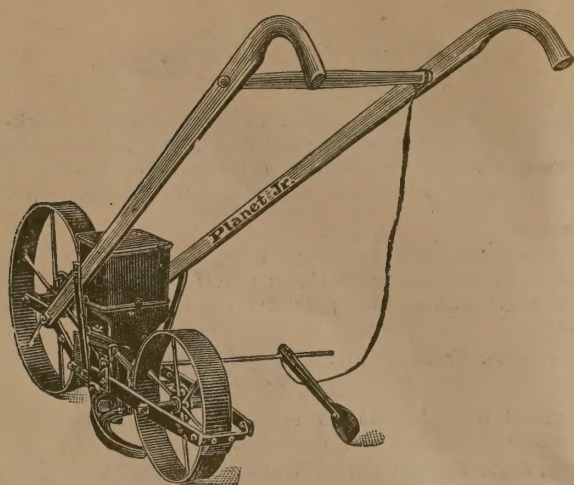
Weight packed, about 50lbs.

CARE SHOULD BE TAKEN TO—

- Regularly oil all moving parts.
- Clean off all dirt and trash before putting machine away after use.
- Keep machine under cover when not in use.

If these details are attended to, the time spent will be many times repaid by prolonged life and low cost of replacements.

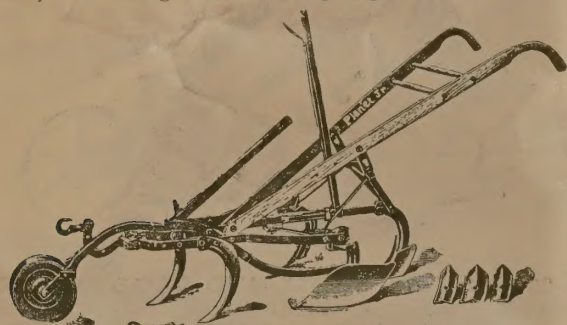
PLANET JR. IMPLEMENTS—(Continued)



No. 26—DRILL SEEDER.

This is essentially a seed sower for all types and conditions of soil. It incorporates a new system of dropping the seed, and the hopper which holds 4 quarts, is quickly removed, which facilitates emptying out surplus seed. The extra substantial wide tread wheels, front and rear, are not only easier running but cover the seed more evenly. Another good feature is that the seed shut-off operates independently of the index setting and cannot disturb it.

Price, £5. Freight extra. Weight, packed, about 60lbs



No. 8—HORSE HOE AND CULTIVATOR.

This horse machine is a general favorite, being complete and easily operated; it is extremely sturdy, well-braced and adaptable to any conditions. The equipment consists of:—Four 3 x 8 in. cultivator steels, one 4 x 8 in. cultivator steel, two 6 in. hillers, one 7 in. shovel and depth regulator.

Price, £5/2/6. Freight extra. Nett weight, 83 lbs.

No. 7.

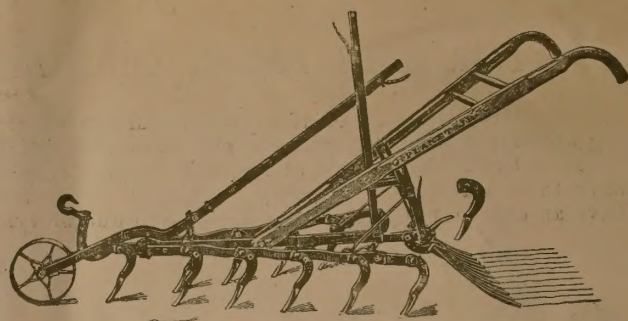
Identical with No. 8, with the exception of the depth regulator which is not included.

Price, £4/17/6. Freight extra. Nett weight, 77 lbs.

No. 9.

Identical with No. 8, except that the wheel is not adjustable by lever and it is not fitted with depth regulator.

Price, £3/17/6. Freight extra. Nett weight, 71 lbs.



No. 90—TWELVE TOOTH HARROW, CULTIVATOR AND PULVERISER.

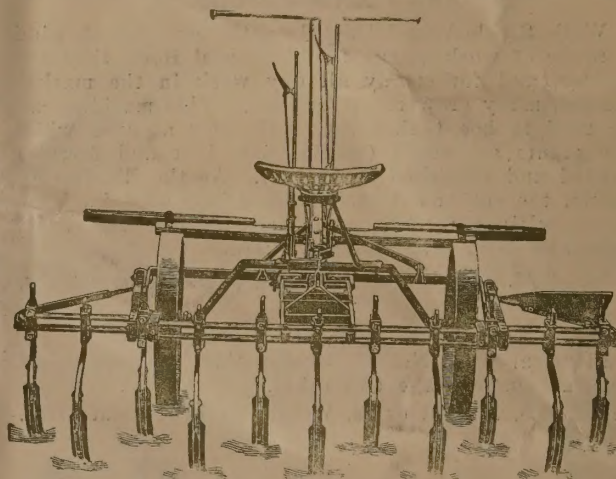
An extremely useful combination tool which leaves as fine surface marks as if it had been raked by hand. There is an extra tooth to take the place of the pulveriser if it is not required. The chisel-shaped teeth are 1½ ins. wide and the angle at which they traverse the ground is adjustable. The depth and width of cut are instantly adjustable by hand levers; the latter may be set anywhere between 15 inches and 3 feet.

Price, £5/7/6. Freight extra. Nett weight, 74 lbs.

No. 90B.

Similar to No. 90, but without the pulveriser.

Price, £4/15/-. Freight extra. Nett weight, 66 lbs.



No. 41—ORCHARD AND UNIVERSAL CULTIVATOR.

This machine has two wheels of which the track is adjustable from 30-40 ins. There are seven steel cultivator teeth running behind the wheels with two extra teeth on both sides on extension bars, making a total of eleven teeth. Complete with the extension, the machine cuts 6 ft. 6 ins., and can be adjusted anywhere down to a 4 ft. cut. There is a side hitch for two horses with the tongue set 15 ins. to the left of centre, thus allowing for working under low branches of orchard trees.

Price, £25. Freight extra. Weight, packed, 474 lbs.

With three-horse hitch, £27/10/-

Without extension bars, £22.

ARTHUR YATES & CO. LTD.

AUSTRALIA'S GREATEST SEED HOUSE

184-186 SUSSEX STREET, SYDNEY